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TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 75

B. B. CHEMICAL CO., PETITIONER,

vs.

ELMER A. ELLIS AND MAGIC TAPE COMPANY

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE FIRST CIRCUIT

PETITION FOR CERTIORARI FILED MAY 8, 1941.

CERTIORARI GRANTED JUNE 2, 1941.

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UNITED STATES CIRCUIT COURT OF APPEALS FOR THE FIRST CIRCUIT.

OCTOBER TERM, 1940.

No. 3626.

B. B. CHEMICAL CO.,
PLAINTIFF, APPELLANT,
v.
ELMER A. ELLIS ET AL.,
DEFENDANTS, APPELLEES.

TRANSCRIPT OF RECORD OF DISTRICT COURT.

No. 4642, EQUITY DOCKET.

B. B. CHEMICAL CO., PLAINTIFF,
v.
ELMER A. ELLIS ET AL., DEFENDANTS.

The bill of complaint in this cause was filed in the clerk's office on the sixteenth day of June, A.D. 1938, and was duly entered at the March Term of this court, A.D. 1938, and is in the words and figures following:

BILL OF COMPLAINT.

[Filed June 16, 1938.]

Plaintiff for its bill of complaint says that it is informed and believes and therefore avers, as stated in paragraphs 1–7 hereof, inclusive, as follows:

1. Plaintiff, B. B. Chemical Co., is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts and an inhabitant of the Commonwealth of Massachusetts, having a usual place of business at Boston, Massachusetts.

Defendant, Elmer A. Ellis, is a citizen of the United States, a resident of Medford, Massachusetts, and an inhabitant of the District of Massachusetts. Defendant, Magic Tape Co., is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts and an inhabitant of the District of Massachusetts, having a usual place of business at Medford, Massachusetts. Defendant, Magic Tape Co., is a corporation organized and controlled by defendant, Elmer A. Ellis. It is in effect an incorporation of said Ellis and a medium through which he carries on business.

2. This is a suit arising under the patent laws of the United States.

3. Elmer A. Ellis, defendant herein, being, prior to November 8, 1929, the first, original and sole inventor of certain new and useful improvements in manufacture of insoles, lawfully filed on said day an application for Letters Patent therefor, and all his rights in said invention and application, and any patent which might issue thereon, having been assigned for a valuable consideration, by an instrument in writing duly recorded in the United States Patent Office, to the plaintiff, under its then name of Boston Blacking Company, Inc., and the statutes and rules of the Patent Office having been fully complied with in all respects, United States Letters Patent No. 1,830,428 was lawfully granted and issued to the plaintiff, under its then name of Boston Blacking Company, Inc., pursuant to said application, on November 3, 1931; and the plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that the same may be taken as a part of this bill. On or about June 21, 1932, plaintiff changed its name from Boston Blacking Company, Inc. to Boston Blacking & Chemical Co., and a certificate to this effect was duly recorded in the United States Patent Office on or about September 2, 1932. On or about November 4, 1936, plaintiff changed its name from Boston Blacking & Chemical Co. to B. B. Chemical Co., and a certificate to this effect was duly recorded in the United States Patent Office

on or about November 20, 1936. Said invention of said Ellis was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

4. The invention patented by said Letters Patent is of great utility and of great value to the plaintiff and has been put into extensive use.

5. Since the date of issue of said Letters Patent, and prior to the filing of this bill of complaint, the defendants, Elmer A. Ellis and Magic Tape Co., and each of them, within the District of Massachusetts and elsewhere within the United States, have jointly and severally infringed plaintiff's exclusive rights under said Letters Patent by practicing the method patented in said Letters Patent and by causing, assisting in, and contributing to the practice of said patented method by others, unlawfully and without license, and defendants threaten and intend to continue said infringement.

6. Plaintiff has heretofore notified the defendants of their infringement of said Letters Patent and defendants have continued their infringement after said notice.

7. Although well aware of the plaintiff's rights under the said Letters Patent, defendants are carrying on and continuing their infringement in violation of plaintiff's rights as secured by said Letters Patent, whereby plaintiff has been and is being greatly and irreparably damaged and whereby defendants have obtained and are obtaining profits which in equity belong to plaintiff, the amount of which damages and profits plaintiff cannot ascertain except by an accounting, and the plaintiff has no adequate remedy at law.

Wherefore plaintiff prays:

(a) For a perpetual injunction restraining the defendants and each of them, their officers, clerks, agents, employees, servants and workmen, from directly or indirectly infringing said Letters Patent and from contributing to infringement thereof by others, and for a preliminary injunction to the like effect pending this suit.

(b) That plaintiff recover the profits, savings and advantages realized by the defendants and each of them, and the damages suffered by the plaintiff, by reason of said infringement and for an accounting of such profits and damages, and for plaintiff's costs.

(c) For such other and further relief as equity may require.

B. B. CHEMICAL CO.,
by CHARLES G. BANCROFT,
[SEAL] *its Treasurer.*

A. D. SALINGER,
FISH, RICHARDSON & NEAVE,
84 State Street, Boston, Mass.,
Solicitors and of Counsel for Plaintiff.

COMMONWEALTH OF MASSACHUSETTS,
COUNTY OF SUFFOLK, ss.

On this fifteenth day of June, 1938, before me came the above-named Charles G. Bancroft, treasurer of the B. B. Chemical Co., plaintiff named in the foregoing bill of complaint, and being duly sworn, did depose and say that he had read the foregoing bill and executed the same on behalf of B. B. Chemical Co., and that the same is true to the best of his knowledge, information and belief.

ROBERT D. SALINGER,
[SEAL] *Notary Public.*

My commission expires May 18, 1945.

[Copy of United States Patent No. 1,830,428, attached to the original bill of complaint, is here omitted as it later appears of record as Plaintiff's Exhibit No. 1. JAMES S. ALLEN, *Clerk.*]

This cause was thence continued to the June Term, A.D. 1938, when, to wit, August 5, 1938, the following Answer of Defendant, Magic Tape Company, and Counterclaim was filed by consent:

ANSWER OF DEFENDANT, MAGIC TAPE COMPANY, AND COUNTERCLAIM.

[Filed by consent August 5, 1938.]

Defendant answering the allegations in the bill of complaint of plaintiff, or so much thereof, as it is advised is material, said defendant saving and reserving unto itself the benefit of any and every exception and objection to the many manifest errors and imperfections of the said bill of complaint, denying that said bill of complaint sets forth any sufficient facts or allegations sufficient to maintain this suit, respectfully shows that:

I. Answering plaintiff's clause 1 of said bill of complaint, defendant has no knowledge as to whether or not the B. B. Chemical Company is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts and, therefore, calls upon the defendant to prove the same, if material.

II. Defendant, Magic Tape Company, admits that it is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at Medford, Massachusetts, but denies that it is, in effect, an incorporation of the party Elmer A. Ellis and the medium through which he carries on business; but, on the contrary, alleges that said Ellis is an officer of said defendant, Magic Tape Company, and that he has served said defendant corporation as an officer in carrying out and directing its business.

III. Said defendant admits that the United States Letters Patent 1,830,428 was duly issued on an application of said Elmer A.

Ellis, which patent was assigned to the Boston Blacking Company, understood to then be a corporation established under the laws of the Commonwealth of Massachusetts, and doing business in Cambridge, Massachusetts, but defendant has no information as to the alleged change of name in said Boston Blacking Company, and whether or not said change is legal and, therefore, denies the same.

IV. Answering plaintiff's clause 4, this defendant corporation is not informed as to the present value of said Ellis Patent No. 1,870,128, alleging that said Boston Blacking Company paid to Elmer A. Ellis the sum of $8,000 for the assignment of said patent from said Ellis to the Boston Blacking Company, said payment being made by the United Shoe Machinery Corporation.

V. Answering plaintiff's clause 5, defendant corporation, denies that it has in any way in the District of Massachusetts, or elsewhere within the United States, infringed the plaintiff's lawful rights, if any, under said Letters Patent by practicing the alleged method purported to be patented by said Letters Patent, nor by causing, assisting, or contributing to the practice of said alleged patented method of said patent by others, neither individually nor jointly with said Elmer A. Ellis, or any others, and defendant corporation denies that it threatens or intends to infringe the said Letters Patent in the future.

VI. Answering plaintiff's clauses 6 and 7, defendant corporation admits that on or about June 4, 1938, it received a notice from plaintiff's attorney threatening suit for alleged infringement to which defendant, by its attorney, promptly answered, demanding to know, how and in what possible manner the alleged infringement existed, to which plaintiff refused an explanation, answer, or information but simply replied insisting that suit would be entered and, without further opportunity for defendant to consider the plaintiff's said notice, plaintiff entered the present suit.

VII. Defendant further denies that it has at any time infringed or continued any infringement of said patent, and denies that it has in any way violated plaintiff's rights as secured by said Letters

Patent; and denies further that plaintiff has been or is being greatly and irreparably damaged, or that defendant has obtained or is obtaining any profits, which in equity, belong to plaintiff.

VIII. Defendant further answering alleges that said patent No. 1,830,428 was and is distinctly limited by its terms, its acknowledging of the prior art in the preamble and specification, and by the prior art practices and previous Letters Patents of the United States and other countries, and by its claims to a method of treating duck and applying same to insoles, wherein all heat is eliminated, the prior art distinctly showing the use of some degree of heat on the coating compound and reinforcing canvas for use in the so-called method of gemming insoles. The essential invention alleged to be claimed in said Letters Patent is on the so-called "cold" process, the fundamental characteristic that distinguished the alleged invention of said patent over the prior art being that a rubber composition is applied "cold" to the reinforcing layer, is used cold, and hence is used at room temperature and entirely independent of any heat, the prior processes mainly relying on heat for carrying out the so-called "hot" process. Defendant also alleges that the particular compound defined and specified in said Letters Patent is necessarily applied and utilized while cold or at room temperature and entirely independent of any predetermined degree or amount of heat, and that said compound could not properly be utilized with any predetermined or substantial degree or amount of heat.

Defendant further alleges that each and every claim of said patent and the alleged improvement and invention purported to be so claimed is limited to the said so-called "cold" process, and that the prior art so limiting the said invention of said patent in addition to its terms are, among others, the following United States Letters Patents:

146,387, January 18, 1874,
391,927, October 30, 1888,
773,607, November 1, 1904,
812,384, February 13, 1906,

926,712, June 29, 1909,
1,272,902, July 16, 1918,
1,279,242, September 17, 1918,
1,713,550, May 21, 1929,
853,326, May 14, 1907,
879,241, February 18, 1908,
1,329,162, January 27, 1920,
1,361,894, December 14, 1920,

also British Patent No. 15,649, of July 5, 1911, and the following reference:

"Crude Rubber and Compounding Ingredients, a text book of rubber manufacture by H. C. Pearson published in 1918 by The India Rubber Publishing Company, New York, third edition, pages 170 and 171. A copy can be found in Division 50 of the United States Patent Office.

IX. Defendant further answering avers that it has long been experimenting with a method of gemming canvas and reinforcing insoles, utilizing a substantial degree of heat, and employing a different method and an entirely different and distinct formula or compound from that set forth in said patent No. 1,830,428, in that the adhesive material applied to the reinforcing canvas and to the insole in defendant's present new method requires a predetermined degree of heat substantially equivalent to the "hot" process of the art and practice prior to said patent.

X. Further answering, defendant alleges that it had placed a limited number of experimental machines in certain shoe factories desiring same for use in trying out its new "hot" process, each machine bearing a notice as follows:

"MAGIC GEMING MACHINE

This machine is a part of a process of geming innersoles. The process requires that the emulsion used in this machine be kept at a heat of about 120 degrees. This machine is loaned with the understanding that the above instructions

will be carried out. Machine No. . Property of The Magic Tape Co., Medford, Mass."

and that defendant is still continuing its experimentation on its new "hot" process with said machine, and that immediately upon the placing of said experimental machines in certain shoe factories the plaintiff brought this suit.

XI. Defendant further answering, and by way of counterclaim, alleges on information and belief, believing same to be true, that the said plaintiff has not brought this suit for alleged infringement of said patent No. 1,830,428 in good faith, but, on the contrary, that said plaintiff has deliberately, intentionally, maliciously, and unjustly brought this suit against defendant as a part of an illegal and inequitable scheme to unjustly annoy, harass, and threaten this defendant, shoe manufacturers, and the trade and public in general; and that said plaintiff is utilizing said patent No. 1,830,428 in an effort to extend and expand the same, in fraud of the public, and of this court as covering the method and articles not properly claimed nor included in said patent, and that plaintiff has unjustly, inequitably, and improperly threatened defendant's customers, intimidating them and preventing their use of defendant s new "hot" process, wherefor the business of this defendant has been unjustly and irreparably damaged to the extent of $100,000, and that said plaintiff is continuing and threatening to continue their unjust, inequitable, and improper schemes to the injury of this defendant unless restrained by this Honorable Court.

XII. Defendant further answering, by way of counterclaim, and on information and belief, believing the same to be true, alleges that the plaintiff, B. B. Chemical Company, is a subsidiary of the United Shoe Machinery Corporation, or Company, understood to be incorporated under the laws of New Jersey but having a usual place of business in this district at Boston, Massachusetts, and that said United Shoe Machinery Corporation, the said plaintiff, B. B. Chemical Company, the H. B. Products Company, this

latter company understood to be a corporation of Massachusetts and located in Brockton, Massachusetts, the Pepperell Manufacturing Corporation, understood to be a corporation of Maine and located at Biddeford, Maine, and perhaps others to this defendant at present unknown, have entered into an illegal agreement or conspiracy whereby, in effect, the plaintiff, B. B. Chemical Company, is compelled by said illegal agreement to enter suit against any competitor entering the field of supplying coated gemmed duck for reinforcing insoles in the boot and shoe industry such suit or suits to be started by said plaintiff, B. B. Chemical Company, whether justified or not, or whether infringement exists or not, which suits by said illegal agreement must be commenced against any competitor appearing in this field within six weeks or thereabouts in order to endeavor to maintain the monopolistic agreement and conspiracy between the parties above named, or such others as may be involved, all to the damage of this defendant as above stated to the extent of $100,000; and that said plaintiff is continuing and threatens to continue said unjust, inequitable, and improper schemes to the further injury of this defendant unless restrained by this Honorable Court.

XIII. Defendant further answering, by way of counterclaim, on information and belief, believing same to be true, alleges that the said United Shoe Machinery Corporation and the plaintiff, B. B. Chemical Company, constitute such a dominant factor in the boot and shoe industry that the mere threat of suit, whether justified or unjustified, against shoe manufacturers and others in the trade results in intimidating the trade and preventing this defendant from entering into a lawful business, wherein the supplying of machines or coated reinforcing for gemmed insoles has been stopped and prevented because of the insidious threats and intimidations to shoe manufacturers where defendant's experimental machines have been installed, these most unfair trade practices and unethical business tactics being initiated by the said plaintiff or its affiliates above noted, whereby their agents, servants, employees, or representatives threaten infringement suits, the repre-

sentatives of said United Shoe Corporation and said H. B. Products Company intimidating defendant's customers by stating that said customers and defendant would be sued by the B. B. Chemical Company if they used machines or bought products from defendant, such acts constituting a fraudulent and unlawful conspiracy against defendant, resulting in damages to the defendant in the sum of $100,000; and said plaintiff and its associates threaten to continue their unjust, inequitable, and fraudulent schemes to the injury of this defendant unless restrained by this Honorable Court.

XIV. Defendant further answering by way of counterclaim, on information and belief, believing same to be true, alleges that in furtherance of said fraudulent schemes of the said plaintiff, it has induced certain parties, to defendant at present unknown, to operate said defendant's experimental machines by cutting off the heating units, and with adhesive other than that supplied by defendant for use with its said machines, which improper, unjust, inequitable and unwarranted method of operation of defendant's machines and process is an unfair trade practice and unethical and inequitable procedure and constitutes a flagrant misuse of defendant's machines and irreparable damage and injury to defendant thereby, resulting in damage to defendant of $100,000, as heretofore alleged, since said machines do not operate properly without heat and defendant's adhesive emulsion used therein requires a predetermined amount and degree of heat for the proper operation of the same in gemming canvas for reinforcing insoles.

Wherefore defendant prays:

1. For an immediate and preliminary injunction against the said plaintiff, its agents, representatives, attorneys, servants, and solicitors from continuing the unlawful threats to defendant's customers and injury to the lawful business of defendant, enjoining and restraining said plaintiff from further interference with defendant's business.

2. For a permanent injunction of like tenure and effect to be issued against said plaintiff its agents and representatives.

3. For an immediate and preliminary injunction against said plaintiff, its agents, representatives, attorneys, servants, and solicitors from continuing the unlawful agreement and conspiracy herein complained of, and enjoining and restraining said plaintiff from further interference thereby with defendant's business.

4. For a permanent injunction of like tenure and effect to be issued against said plaintiff, its agents and representatives.

5. That the defendant may have an order from this Honorable Court for discovery from plaintiff of said agreement between the plaintiff, the United Shoe Machinery Corporation, the H. B. Products Company, the Pepperell Manufacturing Company, or either of them, and others as above complained of.

6. That defendant may have such other and further relief against said plaintiff as the equity of this case may require and as to this Honorable Court may seem meet and proper.

MAGIC TAPE COMPANY,
by ELMER A. ELLIS,
its Treasurer.

JAMES R. HODDER,
Counsel for Defendant.

COMMONWEALTH OF MASSACHUSETTS,
COUNTY OF SUFFOLK, ss.

On this fifth day of August, 1938, before me came the above-named Elmer A. Ellis, treasurer, of the Magic Tape Company, defendant named in the foregoing answer, and being duly sworn, did depose and say that he has read the foregoing answer and executed the same on behalf of the Magic Tape Company and that the same is true to the best of his knowledge, information, and belief.

CLARK HODDER,
[SEAL] *Notary Public.*

My commission expires June 30, 1945.

This cause was thence continued to the September Term, A.D. 1938, when, to wit, September 28, 1938, the following Answer of Defendant, Elmer A. Ellis, was filed by consent:

ANSWER OF DEFENDANT, ELMER A. ELLIS.

[Filed by consent September 28, 1938.]

Defendant answering the allegations in the bill of complaint of plaintiff, or so much thereof as he is advised is material, said defendant saving and reserving unto himself the benefit of any and every exception and objection to the many manifest errors and imperfections of the said bill of complaint, denying that said bill of complaint sets forth any sufficient facts or allegations sufficient to maintain this suit, respectfully shows that:

I. Answering plaintiff's clause 1 of said bill of complaint, defendant has no knowledge as to whether or not the B. B. Chemical Company is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts and, therefore, calls upon the defendant to prove the same, if material.

II. Defendant admits that said Magic Tape Company is a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at Medford, Massachusetts, but denies that it is, in effect, an incorporation of the party Elmer A. Ellis and the medium through which he carries on business; but, on the contrary, alleges that said Ellis is an officer of said defendant Magic Tape Company, and that he has served said defendant corporation as an officer in carrying out and directing its business.

III. Defendant Ellis admits that prior to November, 1929, he was the first, original, and sole inventor of certain improvements in the manufacture of insoles and that he did, on said November 8, 1929, file an application in the United States Patent Office for Letters Patent thereon, which invention was made at a time when it had long been the practice in the manufacture of boots and shoes, particularly welt shoes, to reinforce insoles by cementing thereto a layer of duck, canvas, or the like textile fabric, which

fabric was coated with one or more coats of thermal plastic material, requiring to be heated prior to its application to the reinforcing fabric and to be heated when applied to the insole, the degree of heat being rather critical and, hence, requiring considerable skill on the part of the operator; and that defendant Ellis' said invention consisted in the development of a "cold process", which permitted the application of the adhesive to the reinforcing canvas and of said coated canvas to the insole while cold or at room temperature, the defendant Ellis developing a special type of rubber cement for this purpose, all as more fully set forth in the said patent in suit, which invention defendant Ellis admits was duly assigned to the Boston Blacking Company, Inc. for valuable consideration, and the said patent in suit No. 1,830,428 was issued to the said Boston Blacking Company, Inc.

IV. Answering the fourth clause of the bill of complaint, defendant Ellis admits that said invention and the Letters Patent thereon were of great utility and of great value and has gone into extensive use, but of how great a value the same has been to plaintiff, said defendant is not informed.

V. Answering clause 5 of the bill of complaint, defendant Ellis denies that he has in any way within the District of the United States, or elsewhere, either individually or jointly with said Magic Tape Company, or otherwise, infringed the claims of said patent in suit, and denies that he has caused, assisted, or contributed to practicing the method patented by said Letters Patent, and denies that he intends or threatens to practice the said method claimed in said Letters Patent.

VI. Defendant Ellis denies that he has been notified of the alleged infringement of said Letters Patent, but on the contrary alleges that he has requested the plaintiff, through its attorneys, to explain, describe, and otherwise identify the alleged infringements complained of; and that said plaintiff has declined and refused so to do; and defendant denies all other allegations of said clauses 6 and 7 of the bill of complaint.

Wherefor defendant prays that said bill of complaint may be dismissed so far as he is individually concerned, and that he may recover his cost· expenses, and damages resulting from said bill of complaint inc· tably and improperly brought against him.

ELMER A. ELLIS,
by JAMES R. HODDER,
his Attorney.

This cause was thence continued from term to term to the March Term, A. D. 1939, when, to wit, May 24, 1939, the following Stipulation was filed:

STIPULATION *RE* ACTIVITIES OF PARTIES PENDING TRIAL.

[Filed May 24, 1939.]

This cause having come on for hearing before the United States District Court on May 19, 1939, on plaintiff's motion for a preliminary injunction, and the court having suggested to the parties a stipulation with regard to the activities of the parties pending trial, which trial was set by the court for October 3, 1939, it is hereby stipulated as follows:

Attached hereto is a list of twenty shoe manufacturers who are now either customers or prospective customers of the defendants.

Plaintiff agrees that, pending the trial of this case, it, its agents, attorneys, representatives, salesmen or employees will not make any threats under the patent in suit to the firms named on the attached list.

Defendants agree that, pending the trial of this case, they will not solicit business from nor supply machines or materials for use in the practice of the alleged infringing process to any other manufacturers except those named on the attached list.

Nothing contained in this stipulation shall be construed as pre-

venting the parties from competing legitimately against each other for the business of the firms named on the attached list.

FISH, RICHARDSON & NEAVE,
of Counsel for Plaintiff.

JAMES R. HODDER,
of Counsel for Defendants.

Commonwealth Shoe & Leather Co., Whitman, Mass., and Gardiner, Maine
E. E. Taylor Corp., Augusta, Maine
A. G. Walton Co., Chelsea, Mass.
Milford Shoe Co., Milford, Mass.
J. M. Herman Shoe Co., Millis, Mass.
Diamond Shoe Co., Brockton, Mass.
Stratford Shoe Co., Millbury, Mass.
General Shoe Co., Nashville, Tenn.
U. S. Shoe Co., Cincinnati, Ohio
Perry Norvill Co., Huntington, W. Va.
Bedford Shoe Co., Carlisle, Pa.
H. G. Godman Co., Columbus, Ohio
Weyenburg Shoe Co., Milwaukee, Wis.
Knapp Brothers, Brockton, Mass.
Dunn & McCarthy, Auburn, N. Y.
W. B. Coon Co., Rochester, N. Y.
Stone & Tarlow, Brockton, Mass.
E. T. Wright Co., Rockland, Mass.
Regal Shoe Co., Whitman, Mass.
J. Landis Shoe Co., Palmyra, Pa.

This cause was thence continued from term to term to the September Term, A.D. 1939, when, to wit, September 25, 1939, the following Defendants' Amendment to Answers was filed and allowed by the court:

DEFENDANTS' AMENDMENT TO ANSWERS.

[Filed and allowed September 25, 1939.]

Now come the defendants in the above-entitled case and move to amend their respective answers by adding the following new paragraph, to be numbered "XV" in the answer of defendant, Magic Tape Company, and "VII" in the answer of defendant, Elmer A. Ellis:

> And further answering the defendant avers that the plaintiff does not license shoe factories and makers of insoles to practice the patented process; that the course of business of the plaintiff and its licensees, real and pretended under the Letters Patent in suit, is to make and sell the unpatented materials which are to be used in practicing the patented process; that as a result of said manner of conducting said business by refusing to issue licenses under the process patent, except for the implied license to those who buy the unpatented materials for the practice of the process from the plaintiff or its said licensees, said plaintiff and its said licensees have in fact secured a virtual monopoly in the manufacture and sale of the unpatented materials that are used for the attaching of insoles.

ELMER A. ELLIS AND
MAGIC TAPE COMPANY,
by JAMES R. HODDER,
WILLIAM GATES, Jr.,
their Attorneys.

This amendment may be allowed.

FISH, RICHARDSON & NEAVE,
Attorneys for Plaintiff.

September 22, 1939.

9-25-39. GEO. C. SWEENEY.

At the same term, on the third, fourth and sixth days of Oc-

tober, A.D. 1939, this cause was set down for hearing and fully heard by the court on the pleadings and evidence, the Honorable Elisha H. Brewster, District Judge, sitting.

Said cause was thence taken under advisement from term to term to the present March Term, A.D. 1940, when, to wit, April 24, 1940, an opinion of the court is announced, plaintiff's complaint to be dismissed.

Thereupon, to wit, May 13, 1940, the following Final Decree dismissing the bill of complaint is entered in accordance with the aforemention opinion:

FINAL DECREE.

May 13, 1940.

BREWSTER, J. This cause came on to be heard at this term and was argued by counsel and thereupon, upon consideration thereof, it is ordered, adjudged and decreed

1. That the bill of complaint be and the same hereby is dismissed with costs to the defendants to be taxed by the clerk.

By the Court,

HELEN F. TWEEDY,
Deputy Clerk.

May 13, 1940.
E. H. B.
D.S.

From the foregoing final decree, the plaintiff, B. B. Chemical Co., files a notice of appeal to the United States Circuit Court of Appeals for the First Circuit on the eleventh day of June, A.D. 1940.

OPINION.

April 24, 1940.

[32 Fed. Supp. 690.]

BREWSTER, J. This is an infringement suit, presenting only two issues, (1) the issue of infringement, and (2) the issue whether, as a result of plaintiff's manner of conducting its business, it and

its licensees have, in fact, secured a virtual monopoly in the manufacture and sale of unpatented materials. The word "defendant", as herein used, means the corporate defendant Magic Tape Corporation unless otherwise indicated.

STATEMENT OF FACTS.

1. The defendant is a Massachusetts corporation with an outstanding capital stock of twenty-five shares, of which the defendant Ellis and his wife own twenty-four. The defendant Ellis is treasurer and general manager of the defendant, which maintains its office in the house of the defendant Ellis. This defendant personally developed and first introduced the process alleged to be the infringing process.

2. On November 3, 1931, Letters Patent of the United States No. 1,830,428 were issued to the defendant Ellis, assignor to the plaintiff. For this assignment the plaintiff paid Ellis $8,000. Ellis admits in his answer "that said invention and the Letters Patent thereon were of great utility and of great value and has gone into extensive use".

3. The invention relates to the manufacture of insoles, with special reference to its application to the coating of the fabric and to use of the fabric in reinforcing insoles. It has long been the practice in the manufacture of shoes to reinforce insoles by cementing thereto a layer of duck or like textile fabric material shaped to the sewing lip, or rib, of the insole, to reinforce the lip, thereby forming a more secure anchorage for the inseam stitches. The usual practice had been to employ a strip of fabric of approximately the width of the insole, having coats of thermoplastic material which had to be heated just prior to its application to the insole in order to secure proper adhesion. The degree of heat required was relatively high, and considerable skill on the part of the operator was required in order to produce uniform results. Several disadvantages were found in this practice. It was commonly known as the "hot process". There was also, prior to Ellis's entry into the art with his patent, a process de-

veloped known as the "cold process", which had failed to meet with the general approval of shoe manufacturers. In view of the foregoing, Ellis provided, in his patent, a novel method of coating fabric and of using such fabric in reinforcing insoles. He used a suitable fabric, such as gem duck, coated in the web with a rubber composition. After heating and drying, the non-tacky web was then cut into strips and wound into rolls. The next step in the process was to apply a coating of rubber cement to the pre-coated material just before the strip was applied to the insole. This application is made by the shoe manufacturer. The fabric thus coated is then at once applied to the insole and "formed in" around the rib, or lip, usually with a hand tool.

4. The plaintiff, since 1929, has used a base coating composed of crude rubber with zinc oxide and resin, and has furnished its customers with a top coating material with practicaliy the same ingredients, only in different proportions. Since 1932, however, it has used a base coating, and has provided manufacturers with a top coating, which included a certain percentage of 60 per cent concentrated latex and other ingredients, the rubber content of each being about 35 per cent of the whole. Neither the plaintiff nor its licensees use heat in the application of the top coat.

5. So far as we are concerned with the base coating, that of the defendants essentially follows the patent. The formula now used is rubber, R.P.A. No. 1 and naphtha. The controversy over infringement centers about the top coating. Defendant furnishes its customers for this purpose two kinds of coating, one containing a 60 per cent concentrated latex, and the other a 52 per cent concentrated latex. These coatings are not made by the defendant but are purchased from different concerns engaged in the manufacture of them. In each type an ingredient, a substitute for tragacanth, is introduced. What that ingredient is, or what are its proportions, was not disclosed.

The question to be decided is whether this top coat, as it is used in defendants' process, is the equivalent of that of the patent

and is within claim 4 of the patent, which is the only claim in issue.

6. Claim 4 reads as follows:

> "4. That improvement in methods of reinforcing insoles which comprises applying, at room temperature, to a strip of reinforcing material provided with a dry coating of a cement having a substantial rubber content, a coating of adhesive containing a relatively large amount of rubber and of such a character that it will be effective even when freshly applied to cause quick adhesion of the reinforcing material and the material of the insole, and applying to each other, still at room temperature, a portion of the coated strip and the insole to be reinforced."

All the claims of the patent are for a process but all except claim 4 include specific reference to ingredients entering into either the base or the top coating, and in the latter always a resin, or rosin, is included in the description.

7. Defendants contend that their latex adhesives do not respond to the terms of claim 4, if that claim is properly limited. This calls for a further consideration of the specifications of the patent, also of prior patents and the proceedings of the Patent Office relative to the patent in suit, in order to define the invention protected by claim 4.

Plaintiff's assignor Ellis was not the first to discover a cold process, for he refers in his specification to unsuccessful attempts to develop such a process. He not only sought an improvement over the old cold process but, what is more important, a process which would eliminate the necessity of heating to a relatively high degree of heat a thermoplastic material as it was being applied. He did this by providing a pre-coated duck treated with a "cold rubber cement composition containing rubber, a resin and a solvent". Then, prior to the use of the strip as reinforcing material, a coating of rubber cement is applied at room temperature. The specifications gave preferred formulae for both the base and

top coatings, both of which involve the use of appropriate quantities of rubber, zinc oxide, Burgundy pitch and naphtha. According to the specifications "This (second) coating, while it may advantageously be made up in general of ingredients similar to those used in the first coating, preferably has the ingredients in different proportions, ... The proportion of solvent in this composition is relatively small so that a cement having a high viscosity is produced and having, because of the high resin content, the requisite tackiness. . . . The solvent employed in the second coating is preferably one that will quickly evaporate substantially completely at ordinary room temperature, ..."

Ellis describes the function of the second coating as follows:

> "The composition for the second coating is applied to the strip while cold, that is at normal room temperature, the coating being very thick compared with the thickness of the first coat. As soon as the highly viscous and heavy second coating is applied to the strip, the strip is exposed to the air and the highly volatile solvent begins to evaporate from the exposed surface. At the same time the first coating is absorbing the solvent from the second coating so that in a very short time, in fact in a few seconds, sufficient solvent has been removed from the second coating to render it tacky instead of slimy or slippery, and hence it is in suitable condition for the application to the insole. Since the two coatings are of a similar nature, the rubber solvent absorbed by the first coating from the second coating softens the first coating so that the two coatings cohere and firm adhesion between strip and the insole is assured."

Thus we see that the necessity of heat was obviated and delay incident to the operation of the old cold process was avoided by applying to a pre-coated fabric a rubber cement composition which was highly viscous and which contained among its ingredients a volatile solvent so that absorption and evaporation together with a tack-producing ingredient gave a fabric with sufficient adhesive qualities to permit its immediate use in reinforcing insoles.

8. While conceding that the results obtained by defendants' process are identical with those obtained by the process of the patent, the defendants argue that the results are attained by means so dissimilar that they cannot properly be held to be equivalent to the means of the patent.

The argument is that rubber cement is a colloidal dispersion in rubber solvent, while latex is a colloidal dispersion in water. Defendants agree that they are both adhesives, and their expert testified that they were certainly equivalents "but not for all purposes and at all times".

It is also conceded that both the latex and the rubber cement develop adhesion as the liquid vehicle evaporates, and that in both cases the liquid evaporates slowly. The defendants say, however, that Ellis, plaintiff's assignor, avoided slow evaporation of the solvent by the rapid evaporation and rapid absorption of a highly volatile cement in the pre-coat. This is undoubtedly true, but it has already appeared in these findings that the defendant uses a volatile solvent in its pre-coat. The defendants point to the testimony of plaintiff's expert, to the effect that rubber in solvent, as described in the patent, co-acts in some way with the base coat but not exactly the same way as would the latex top coat, though the final result would be quite similar. I am satisfied that the adhesive powers of the twice-coated fabric are due to evaporation and absorption of the liquid, brought about by means that are well within any reasonable range of equivalents to which the patentee may lay claim under the broad language of claim 4.

9. I find nothing in the cited prior patented art which would limit claim 4 to a rubber-resin cement. These earlier patents teach that a latex is the equivalent of crude rubber dispersed in a solvent.

Nor do I find anything in the proceeding in the Patent Office that requires such a limitation to the claim. Ellis, in these proceedings, expressly disclaims any intention of claiming "a cement consisting of rubber, resin, a filler and a solvent". He makes it

clear that he is claiming a method in which such a cement was one of the compositions that might be used in a step of the process.

10. The defendants further contend that they do not infringe because heat is necessary or produces results which are an improvement over the cold process of the patent; in other words, that their process will not work satisfactorily at room temperature. I take the words "room temperature", as used in the claim in suit, to mean a temperature that involves the intervention of heat from some source in order to bring the temperature of the latex substantially above the normal temperature of the air in the room where the operation takes place.

During the course of the trial, the parties conducted a series of tests. Insoles were reinforced, using defendants' pre-coated fabric which had been top-coated with defendants' latex adhesive, both at room temperature and also with the latex heated to 115 degrees Fahrenheit. The defendants do not claim that the ultimate bond is any better with heated than with unheated latex. They do, however, contend that the heated latex permits speedier coating and forming. Operators of defendants' machine, who had never operated without heat, testified that the more the top-coat was heated, the quicker the "bite" when the insole was applied to the coated fabric. Another witness, who was familiar with the operation of defendants' process, saw no difference between defendants' heated and unheated adhesive.

During the *inter partes* test, above referred to, an attempt was made to measure the interval of time from the beginning of the reinforcing process until twenty insoles had been reinforced, with a view of determining whether the heated latex had a quicker "bite" than the unheated. Tested immediately after the coated fabric had been attached to the insole, no difference in tackiness was discovered. Defendants' expert, who was present, noted that the time actually required averaged 14 seconds longer when the unheated adhesive was used than when heated. I am unable to find, on all the evidence, that any substantial benefit is derived

from the use of the heat, either in the ultimate bond or in rapidity of operation.

11. Plaintiff's manner of conducting its business was to supply shoe manufacturers, for use in reinforcing insoles, the pre-coated duck which it had slit into strips of suitable width; if the manufacturer desired, he supplied the duck and the plaintiff pre-coated and slit it. Plaintiff also supplied adhesive, to be applied to said pre-coated fabric at the shoe factory immediately prior to the application of the reinforcing material to the insole, and also machines suitable for use in applying said adhesive to said strips, the machines being and remaining the property of the plaintiff. These machines were covered by Letters Patent of the United States owned by the plaintiff. The plaintiff, in addition, gave instructions to operators, serviced the machines and advised and assisted in the reinforcing operation. As compensation for the foregoing, the plaintiff made a single charge to the shoe manufacturer at a rate per web yard of duck supplied to the manufacturer; and, if the manufacturer did not furnish the duck, the price of that material was added to the charge. The adhesives used by the plaintiff in pre-coating the duck have all had a large rubber content but were made according to different formulae, developed from time to time by the plaintiff with special reference to the purpose for which the material was to be used. The plaintiff did not grant written licenses to shoe manufacturers, nor was any such license ever requested. Neither by notice or by agreement in any form with its customers did it require them to use only plaintiff's material. The plaintiff adopted the foregoing method of utilizing the patented process, deeming it the most practical method for so doing.

12. The plaintiff, in 1932, gave to the Pepperell Manufacturing Company and to the H-B Products Company licenses to use the patented process. These licenses only granted rights to use machines and materials for performing a latex or non-solvent top coating. These licensees, therefore, apply only, as a top coating, a latex type of adhesive, applied at room temperature. Their

commercial practice is substantially identical with that of the plaintiff.

13. In 1938, the defendant Ellis began to develop and promote a process for reinforcing insoles, and the course of business adopted by his corporation followed closely that of the plaintiff. The shoe manufacturer was furnished with pre-coated fabric in rolls of the required width with material for top coat and with machines for applying the top coat which were leased to the customer, the defendant agreeing to service the machines. For the materials, use of the machine, and the service rendered, the manufacturer paid according to the yardage of the pre-coated duck furnished by the defendant. The price per yard charged by the defendant was somewhat lower than the plaintiff's price. The defendant installed in its apparatus, furnished the shoe manufacturer, a heating element. Prior to the suit, these heating units were only 40-watt and 60-watt units. Since the suit, it has installed a 150-watt unit together with an automatice thermoswitch. I find that with the 60-watt heat unit, which was used prior to the suit, the temperature of the latex when applied was not above room temperature, as above defined. With the 150-watt unit, higher temperatures are obtained, but none anywhere near the 200 degree Fahrenheit, which was the temperature of the adhesive used in the old hot process and, as a matter of practice, there is no pretense of maintaining the temperature of the top coating at 120 degrees.

14. The early machine, which the defendant loaned for applying the top coat, bore a name plate which contained the following legend:

> "Magic Tape Machine. Patent Applied For.
>
> This machine is part of a process for gerning innersoles. The process requires that the emulsion used in this machine be kept at a heat well above room temperature. This machine is loaned with the understanding that the above instructions will be carried out. Property of the Magic Tape Company, Medford, Massachusetts."

Later, the language on the name plate was changed to read that the emulsion must be kept at a heat of about 120 degrees. In all other respects the later name plate followed the earlier.

15. If, as some authorities hold (see *Baldwin Rubber Co.* v. *Paine & Williams Co.*, 99 F. (2d) 1), the question of infringement is one of fact, I find that claim 4, properly construed, is infringed by the defendants' process.

Conclusions of Law.

1. The defendants are estopped from attacking the validity of the claim in suit. This is conceded by the defendants.

2. Claim 4, rightly construed, includes the defendants' process, and both defendants are guilty of infringement of that claim.

We are dealing with a claim which must be deemed valid, which is couched in language which does not limit the grant to the specifications, or to any formula contained therein. The claim is the measure of the grant. *Smith* v. *Snow*, 294 U.S. 1. The claim in issue defines both the base coating and the top coating. Defendants' pre-coating not only comes within the terms of the claim, but it follows closely the preferred formula of the specifications. The defendants' latex adhesive, of course, differs from the rubber cement of the specification. Nevertheless, it falls clearly within the terminology of the claim, which defines the top coat as (1) an adhesive containing a relatively large amount of rubber, and (2) of such a character that it will be effective even when freshly applied to cause quick adhesion of the reinforcing material and the material of the insole (3) at room temperature. There can be no doubt on the facts that defendant's top coat is an adhesive containing a relatively large amount of rubber and that it has the requisite characteristics of quick adhesion at room temperature.

Although the exact nature of defendant's latex adhesive, used as a top coat, is not known, it may be assumed that the latex does not co-act in exactly the same way as rubber dispersed in a volatile solvent. Proceeding on this assumption, defendants argue

that, in their process, means are provided for accomplishing the object of the invention, which are different from those of the patent. With that contention, I am unable to agree. Defendants' method involves the process of evaporation and absorption at room temperature without the necessity of heat, consequently the same results are obtained by substantially similar means, and the rule which applies to equivalents must be applied. It may be observed that the patent is for a method, or process, and not for a composition of matter. The terms of the claim permit of equivalent means of producing strong and quick adhesion, and this although the patent may not be deemed a pioneer patent.

Paper Bag Patent Case, 210 U.S. 405;
Nachman Spring-Filled Corp. v. *Spring Products Corp.*, 68 F. (2d) 829;
Frick Co. v. *Lindsay*, 27 F. (2d) 59, 62.

As between assignor and assignee, the dominant equitable rule is that the construction of the patent must be broad and liberal enough to give full value to the patent assigned. *Frick Co.* v *Lindsay, supra.*

Notwithstanding these departures from the specifications of the patent, the conclusion is inevitable that the defendants employ and, therefore, are infringers. See *Baldwin Rubber Co.* v. *Paine & Williams Co., supra.* A different view might be tenable if it had been shown that the introduction of heat substantially above room temperature was necessary to a satisfactory bond or quick adhesion, but such necessity was not established by the *inter partes* tests or by other evidence. The mere fact, if it be a fact, that heat somewhat improved the process would not be enough, under the circumstances of the case, to escape the charge of infringement. *Tilghman* v. *Proctor*, 102 U.S. 707; *Westinghouse* v. *Boyden Power Brake Co.*, 170 U.S. 537, 568.

Tilghman v. *Proctor, supra*, was a case involving a patent for a process. In the course of the opinion the court said (page 733):

"The matter may be stated thus: Tilghman discovers a

process of decomposing fats by mixing them with water, and heating the mixture to a high temperature under a pressure that prevents the formation of steam. It is a new process, never known before. The defendants seeing the utility of the process, and believing that they can use a method somewhat similar without infringing Tilghman's patent, put a little lime into the mixture, and find that it helps the operation, and that they do not have to use so high a degree of heat as would otherwise be necessary."

The court observes that—

"It may be an improvement to use the lime for that purpose; but the process remains substantially the same. The patent cannot be evaded in that way."

In the *Westinghouse* case, the court said that—

"We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided."

In *Nachman Spring-Filled Corp.* v. *Spring Products Corp.*, *supra*, at page 830, this statement is made:

"Infringement is not avoided by merely providing inventionless or colorable evasion of the terminology of the claims. We have recently restated the test to be whether the infringing device embodies the substance of the invention and accomplishes the objects of the invention in substantially the same way and by substantially the same or equivalent means. *Colton Co.* v. *McKesson & Robbins*, 58 F. (2d) 157."

Other cases supporting this proposition are—

Vortex Mfg. Co. v. *Ply-Rite Contracting Co.*, 33 F. (2d) 302;

American Bitumuls v. *Union Oil Co.*, 24 F. Supp. 795;

Colgate-Palmolive-Peet Co. v. *Lever Bros. Co.*, 90 F. (2d) 178.

All the above-cited cases involve the application of heat, either to a cold process as in *Vortex Mfg. Co.* v. *Ply-Rite Contracting Co., supra*, or else the temperature used was lower or higher than that required by the specifications of the patent.

The defendants derive no aid from the instruction appearing upon its machine to the effect that the process requires that the emulsion be heated.

Wheatley v. *Rex-Hide, Inc.*, 102 F. (2d) 940.

See also

Leeds & Catlin Co. v. *Victor Talking Machine Co.* (No. 2), 213 U.S. 325.

3. The plaintiff is not entitled to maintain this suit for contributory infringement.

The facts of the case at bar bring it within *Carbice Corp. of America* v. *American Patents Development Corp.*, 283 U.S. 27 and *Leitch Mfg. Co.* v. *Barber Company*, 302 U.S. 458, and the following decisions of lower courts:

J. C. Ferguson Mfg. Works, Inc. v. *American Lecithin Co.*, 94 F. (2d) 729;

Alemite Corp. v. *Lubrair Corp.*, 62 F. (2d) 899;

American Lecithin Co. v. *Warfield Co.*, 105 F. (2d) 207;

Philad Co. v. *Lechler Laboratories, Inc.*, 107 F. (2d) 747.

The rule to be deduced from these cases is that although a patent may be valid and may be infringed, the owner may not invoke the aid of the court to enjoin, as a contributory infringer, one who sells (*J. C. Ferguson Mfg. Works. Inc.* v. *American Lecithin Co., supra*) or, as a direct infringer, one why buys (*American Lecithin Co.* v. *Warfield Co., supra*) an unpatented article of commerce to be used in the patented process.

The latest statement of the rule is found in *Ethyl Gasoline Corp.* v. *United States*, (United States Supreme Court, decided March

25, 1940) where the court states that a patentee "may not, by virtue of his patent, condition his license so as to tie to the use of the patented device or process the use of other devices, processes or materials which lie outside of the monopoly of the patent licensed; . . ."

Another recent case is *Philad Co.* v. *Lechler Laboratories, Inc., supra,* in which the Circuit Court of Appeals for the Second Circuit defined and applied the rule. In this case the Philad Co., owners of a patent on a process for imparting a permanent wave to the hair, brought suit charging defendants with contributory infringement in that they sold appliances, designed for use in waving the hair by the patented process, with knowledge that purchasers were to use the appliance in waving hair by that process. The Philad Company did not use the patented process, nor did it collect royalties from hairdressers for its use; instead it issued licenses to different concerns, manufacturing hair-waving equipment, with authority to sub-license the process to purchasers of the equipment. Judge Paterson, speaking for the court, referring to the *Carbice* and *Leitch Mfg. Co.* cases, said—

> "Obviously these decisions present an important limitation on the doctrine of contributory infringement as formerly understood. . . . On contributory infringement the distinction at present is between the case where an owner of a patent exploits it in the ordinary manner and the case where he employs it primarily as a means of suppressing competition in unpatented materials used in connection with it. The present cases are obviously of the latter type. The patent sought to be enforced is on a process of waving hair. It does not give the plaintiff a monopoly in the appliances by which the process is operated. Yet the plaintiff's course of conduct shows plainly that the sole use made of the patent is to suppress competition in the appliances. It is not entitled to relief against those who sell such appliances without its leave."

In this case it also appeared that the rule was not to be limited to efforts of a patentee to control the use of *staple* materials. Emphasis was laid "on the fact that the articles handled by the alleged contributory infringers were not covered by the patent, and on the further fact that the patentee by his method of doing business was using his patent as if it did cover such articles."

In the Ninth Circuit, in *Johnson* v. *Philad Co.*, 96 F. (2d) 442, the Circuit Court of Appeals reached a different conclusion respecting the extent of the monopoly of the patented process of the Philad Co. It is my opinion that the decision of the Circuit Court of Appeals for the Second Circuit, in *Philad Co.* v. *Lechler Laboratories, Inc., supra,* is more consistent with the decisions of the Supreme Court cited above.

The owner may refuse to exploit his patent, he may practice it or he may grant licenses and exact royalties or license fees (*Ethyl Gasoline Corp.* v. *United States, supra*), but if he "adopts a method of doing the business which is the practical equivalent of granting a written license with a condition that the patented method may be practiced only with" materials purchased from the owner, he thereby extends his monopoly beyond the limits of the grant of the patent. *Leitch* v. *Barber Co., supra,* (page 460).

In the case at bar, as in *Leitch* v. *Barber Co., supra,* there was only an implied license to use the process, with no notice or agreement requiring the licensee to buy materials of the owner. Nevertheless, the Supreme Court held, in *Leitch* v. *Barber Co., supra,* that these facts were without legal significance, adding that,—

> "The court held in the Carbice case that the limitation upon the scope or use of the patent which it applied was 'inherent in the patent grant'. It denied relief, not because there was a contract or notice held to be inoperative, but on the broad ground that the owner of the patent monopoly, ignoring the limitation 'inherent in the patent grant', sought by its method of doing business to extend the monopoly to unpatented material used in practicing the invention."

Thus it appears to be decided by the Supreme Court that it is not necessary that a patent owner undertake to suppress competition by warnings to the trade, or by imposing restrictions upon a licensee in order to unduly extend the grant. A method of doing business which leads to such suppression of competition in unpatented commodities will be enough, under the *Leitch Mfg. Co.* case, to prevent success in a suit against a competitor for contributory infringement.

The question presented, therefore, is whether the plaintiff by its method of doing business is seeking to extend its monopoly to unpatented materials used in practicing its process.

In the instant case, plaintiff grants no written licenses to shoe manufacturers. The plaintiff furnishes them the precoated fabric and the top-coated material and provides and services machines for use in the second step of the process. It does not exact any royalty for the right to use the patented method. Its profits are derived from, and measured by, material furnished by it to the manufacturer. This is not a case where an owner exploits his patent in the usual way. The defendant's latex adhesive is not manufactured by it exclusively for use in the patented process. It is a product manufactured by other concerns and bought and sold in the market. Clearly, the plaintiff's monopoly cannot extend to this product, even though it may be made according to a secret process controlled by the manufacturers of the latex compounds. See *International Business Machines Corp.* v. *United States*, 298 U.S. 131; *Oxford Varnish Co.* v. *Ault & Wiborg Corp.*, 83 F. (2d) 764.

Whether defendant's machines infringe plaintiff's patent is a question not now in issue. For the purposes of this suit they are to be treated as unpatented devices.

Philad Co. v. *Lechler Laboratories, Inc., supra.*

The fact that plaintiff's method of conducting its business is the most practical method is not a controlling factor. The question cannot be decided as a matter of convenience to either plaintiff or

defendant. I agree that it would probably not be practicable for the plaintiff to practice the invention in its plant, but I am not impressed with the suggestion that it would not be feasible to issue licenses to shoe manufacturers.

Plaintiff's complaint may be dismissed.

NOTICE OF APPEAL.

[Filed June 11, 1940.]

Notice is hereby given that the B. B. Chemical Company, plaintiff above-named, hereby appeals to the United States Circuit Court of Appeals for the First Circuit from the final decree entered in this action on or about May 13, 1940.

B. B. CHEMICAL COMPANY,

by HARRISON F. LYMAN,

CHARLES E. HAMMETT, Jr.,

Attorneys.

PLAINTIFF'S STATEMENT OF ERRORS.

[Filed June 22, 1940.]

Now comes B. B. Chemical Co., plaintiff-appellant, and states that the errors of the District Court relied upon in plaintiff's appeal to the United States Circuit Court of Appeals for the First Circuit are as follows:

1. The District Court erred in holding that "The plaintiff is not entitled to maintain this suit for contributory infringement".

2. The District Court erred in holding that the facts of the present case bring it within *Carbice Corp.* v. *American Patents Development Corp.*, 283 U.S. 27, *Leitch Mfg. Co.* v. *Barber Co.*, 302 U.S. 458, and decisions of lower courts mentioned in the opinion.

3. The District Court erred in holding that

> "The rule to be adduced from these cases is that although a patent may be valid and may be infringed, the owner may not invoke the aid of the court to enjoin, as a contributory

infringer, one who sells . . . or, as a direct infringer, one who buys . . . an unpatented article of commerce to be used in the patented process."

4. The District Court erred in failing to hold that the principle stated by said authorities does not apply to a case where a defendant's acts include not only the sale of unpatented material, but also the encouragement of and participation in the carrying on by others of the infringing operation, supervising that operation, itself performing a step in that operation (precoating the duck), and supplying, for use in that operation, machines and materials which are especially designed for use in the infringing operation.

5. The District Court erred in failing to hold that the principle stated by said authorities does not apply to a case where the materials supplied by defendant are, as here, machines and materials which are not staple articles of commerce but which are especially prepared for use in the infringing operation.

6. The District Court erred in failing to hold that the principle stated by said authorities does not apply to a case where it appears, as here, that plaintiff's course of business is dictated by practical necessity, and that the suppression of competition in the sale of unpatented materials forms no part of its purpose, and is not accomplished in practice.

7. The District Court erred in failing to hold that the principle stated by said authorities does not apply to a case where, as here, the plaintiff's course of business does not consist merely in the sale of unpatented materials, but where the plaintiff cooperates with its customers in the actual practice of the process of the patent, by instructing them in the proper conduct thereof, giving instructions to operators and advice and assistance in the conduct of the process, servicing machines, and itself performing one step of the process (precoating the duck).

8. The District Court erred in failing to hold that the plaintiff is not, by its method of doing business or otherwise, seeking to extend its monopoly to unpatented materials used in practicing

the process of the patent in suit, and in failing to hold that the plaintiff and its licensees have not in fact secured a virtual monopoly, or any monopoly whatsoever, in the manufacture and sale of unpatented materials.

9. The District Court erred in failing to find that plaintiff's method of doing business under the patent in suit is the only practical method of operating under the patent and that, under these circumstances, the principle of law stated by said authorities does not apply to the case.

10. The District Court erred in failing to hold that defendants are direct as well as contributory infringers of the patent in suit.

11. The District Court erred in holding that defendant's latex adhesive is not manufactured exclusively for use in the process of the patent in suit.

12. The District Court erred in dismissing the complaint.

13. The District Court erred in failing to order the issuance of an injunction and an accounting for profits and damages as prayed for in the complaint.

14. The District Court erred in awarding costs to defendants and in not awarding costs to plaintiff.

B. B. CHEMICAL CO.,
by HARRISON F. LYMAN,
C. E. HAMMETT, Jr.,
of Counsel.

Service of two copies of the foregoing statement of errors acknowledged this twenty-second day of June, 1940.

WILLIAM GATES, Jr.,
of Counsel for Defendants.

A bond on appeal in the sum of two hundred fifty dollars ($250) was filed by the plaintiff on the eleventh day of June, A.D. 1940, the National Surety Corporation of New York, N. Y., acting as surety.

DESIGNATION OF CONTENTS OF RECORD ON APPEAL.

[Filed June 22, 1940.]

Now comes B. B. Chemical Co., plaintiff-appellant, and files its designation of the portions of the record, proceedings and evidence to be contained in the record on appeal, as follows:

Item No.	Description
1	Bill of complaint.
2	Answer of defendant Magic Tape Company.
3	Answer of defendant Ellis.
4	Stipulation filed May 24, 1939.
5	Amendment to defendants' answers, allowed by Sweeney, J. September 25, 1939.
6	The reporter's transcript of the testimony and proceedings at the trial before Brewster, J. October 3, 4 and 6, 1939, in form agreed upon by the parties.
7	Opinion of Brewster, J. dated April 24, 1940, including "statement of facts", "conclusions of law" and direction for entry of judgment.
8	Final decree entered on or about May 13, 1940.
9	Notice of appeal filed June 11, 1940.
10	Memorandum stating date, penalty, names of obligors and condition of appeal bond.
11	This designation as to contents of record on appeal.
12	Statement by appellant of errors to be relied on on this this appeal.
13	Order extending time for filing transcript of record and docketing case in Circuit Court of Appeals.
14	Certificate of Clerk of the District Court as to correctness of record.

In reproducing pleadings, headings shall be omitted.

The printed transcript of record shall include also the following exhibits:

PLAINTIFF'S EXHIBITS.

Exhibit No.	Description
1	Ellis patent No. 1,830,428.
2	License agreement between plaintiff and Pepperell Mfg. Co.
3	License agreement between plaintiff and H-B Products Co.
4	Two photographs of "Hot Process" machine.
13	Nash patent No. 1,771,388.
14	Nash patent No. 2,149,307.
19	Calculations of planimeter measurements (2 sheets).
20	Tabulation of planimeter measurements.
21	Photograph of Scott tester.

DEFENDANTS' EXHIBITS.

Exhibit No.	Description
C	Bill from Clifton Mfg. Co.
E	Prior art patents as follows:

UNITED STATES PATENTS.

Number	Name	Date
275,248,	L. E. Moore,	Apr. 3, 1883.
579,518,	C. H. Krippendorf,	Mar. 23, 1897.
575,460,	E. M. Cole,	Jan. 19, 1897.
812,384,	Thoma,	Feb. 13, 1906.
849,245,	A. E. Johnson,	Apr. 2, 1907.
853,326,	Thoma,	May 14, 1907.
926,712,	Thoma,	June 29, 1909.
1,272,902,	Bertrand,	July 16, 1918.
1,361,894,	Noble,	Dec. 14, 1920.
1,657,172,	Ernest Hopkinson,	Jan. 31, 1928.
1,779,368,	J. Cavanagh,	Oct. 21, 1930.
1,808,225,	Ernest Hopkinson,	June 2, 1931.
1,928,606,	J. W. Sweany,	Sept. 26, 1933.

BRITISH PATENTS.

Number	Name	Date
3,110,	Hancock & Silver of	1864.
15,649,	Gleason,	July 5, 1911.
24,137,	S. F. Connolly,	Apr. 25, 1912.
269,224,	F. J. Davis,	Sept. 15, 1926.
277,375,	K. D. P. Ltd.,	Sept. 10, 1926.

F Tabulation by Dr. Noble.

The following exhibits, not reproduced in the printed transcript of record, shall be forwarded to the clerk of the United States Circuit Court of Appeals for the First Circuit, as physical exhibits:

PLAINTIFF'S EXHIBITS.

Exhibit No.	Description
5	Machine used in "Bostik" process.
6	Insole.
7	Machine used in "Gold Top" process.
8	Insole.
9	Model 12 machine.
10	Insole
11	Roll of duck obtained at Commonwealth Shoe Company.
12	Jar of adhesive obtained at Commonwealth Shoe Company.
15	Can of defendants' D-219 adhesive.
16	Can of defendants' No. 1 adhesive.
17	Roll of precoated duck.
18	Eight series of graphs made during *inter partes* tests.
22	A, B, C, D, Four insoles.

DEFENDANTS' EXHIBITS.

Exhibit No.	Description
A	Defendants' present machine.
B	Insole.
D	Certified copy of file wrapper of Ellis patent No. 1,850,428.

The original appeal bond shall be certified to the Circuit Court of Appeals for the First Circuit, in accordance with Rule 14 (12) of said court.

B. B. CHEMICAL CO.,
by FISH, RICHARDSON & NEAVE,
Attorneys.

Service of two copies of the foregoing designation of contents of record on appeal acknowledged this twenty-second day of June, 1940.

WILLIAM GATES, Jr.,
of Counsel for Defendants.

TESTIMONY.

Before BREWSTER, J.

HARRISON F. LYMAN, Esq., and
C. E. HAMMETT, Jr., Esq., for the Plaintiff.

JAMES R. HODDER, Esq. and
WILLIAM GATES, Jr., Esq., for the Defendants.

COURT ROOM 2, FEDERAL BUILDING, BOSTON,
October 3, 1939, 10 A.M.

Plaintiff's Evidence.

Mr. Lyman. We have a stipulation your Honor, that Mr. Gates, Mr. Hodder and I have been working on for some time and it takes care of a great many of the formal matters and of some other matters of substance. I suggest that I read it upon the record.

STIPULATION.

It is stipulated by and between the parties hereto, by their respective counsel, as follows:

"1. Uncertified copies of patents may be used with the same force and effect as certified copies of the original patents or of the applications as filed on which said patents were

issued, the dates stated thereon as the dates of filing and issue to be assumed to be correct, subject to correction if error appear.

2. Raymond M. Kinsman, of Boston, Mass., shall be appointed official shorthand reporter to record the proceedings at the trial of this cause. The reporters' charges for furnishing one copy of the record to the court, one carbon copy to counsel for plaintiff and one carbon copy to counsel for defendants shall be equally divided between the parties in the first instance and eventually assessed as costs. Any extra copies desired by either party shall be paid for by the party requesting them."

By the way, I suppose that Mr. Kinsman should be appointed by the court.

The Court. Yes.

Mr. Lyman. May he be so appointed?

The Court. Yes.

Mr. Lyman (Reading):

"3. Defendants admit the incorporation, corporate existence and residence of the plaintiff, as alleged in the bill of complaint.

4. Defendants admit plaintiff's title to the patent in suit, obtained by assignment from defendant Ellis, and also the change in plaintiff's corporate name, as alleged in the bill of complaint.

5. Defendants admit the receipt of notice of alleged infringement of the patent in suit.

6. At the trial of this cause plaintiff will rely on claim 4 of the Ellis patent in suit.

7. At the trial of this cause defendants will rely on the following prior art:

Cited in Answer of Defendant Magic Tape Co.

United States.

Number	Name	Date
812,384	Thoma	Feb. 13, 1906
853,326	Thoma	May 14, 1907
926,712	Thoma	June 29, 1909
1,272,902	Bertrand	July 16, 1918
1,361,894	Noble	Dec. 14, 1920

British.

15,649	Gleason	July 5, 1911

Not Cited in Answer of Either Defendant.

Number	Name	Date
275,248	L. E. Moore	Apr. 3, 1883
579,518	C. H. Krippendorf	Mar. 23, 1897
575,460	E. M. Cole	Jan 19, 1897
849,245	A. E. Johnson	Apr. 2, 1907
1,657,472	Ernest Hopkinson	Jan. 31, 1928
1,779,368	J. Cavanagh	Oct. 21, 1930
1,808,225	Ernest Hopkinson	June 2, 1931
1,928,605	J. W. Sweany	Sept. 26, 1933

British.

277,375	K. D. P. Ltd.	Sept. 10, 1926
24,437	S. F. Connolly	Apr. 25, 1912
269,224	F. J. Davis	Sept. 15, 1926

8. Defendants intend to offer in evidence a certified copy of the file wrapper of the Ellis patent in suit. The copy of this file wrapper which was filed in court with plaintiff's motion for preliminary injunction may be withdrawn by plaintiff and shall be made available to counsel for defendants, for his use in writing his brief in this cause, at all reasonable times.

9. Defendant Magic Tape Company waives its counterclaim contained in paragraphs XI to XIV inclusive of its

answer, and agrees to the voluntary dismissal of said counterclaim.

10. It is further stipulated that if James C. Clifford were called as a witness, he would testify as hereinafter in this paragraph stated, and that this stipulation, subject to any objection as to relevancy, shall have the same force and effect as if he had been called and so testified."

Here is the stipulation so far as it relates to what the course of business of the plaintiff has been. This is stipulated at the request of my brother, because he wants to get on the record the facts as to the course of business of the plaintiff, on which he proposes to base his argument on the *Barber* v. *Leitch* decision.

"Said Clifford is, and has been since 1922, sales manager of the plaintiff.

No license has been granted by plaintiff under the Ellis patent in suit except a license granted on January 19, 1932 to Pepperell Manufacturing Company of Boston, Massachusetts, a license to H-B Products Company of Brockton, Massachusetts, dated April 15, 1932, and such licenses as may be implied by the course of business hereinafter set forth.

Plaintiff prior to and since the filing of the bill of complaint herein, has supplied to shoe manufacturers in the United States, for use in reinforcing insoles, (a) so-called 'Gem' duck precoated by it with adhesive, and then slit by it into strips of suitable width for the purpose and packaged in roll form after the adhesive has dried; if the manufacturer desires, he supplies the duck and the plaintiff precoats and slits it; (b) adhesive to be applied to said precoated fabric at the shoe factory immediately prior to the application of the reinforcing material to the insole; (c) machines suitable for use in applying said adhesive to said strips, the machines being and remaining the property of the plaintiff; and (d) instruction to operators, servicing of machines and advice and assistance in the reinforcing operation.

As compensation for the foregoing, plaintiff makes a single charge to the shoe manufacturer, which is at a rate per web yard of duck precoated by it and supplied to the manufacturer for use in the reinforcing operation; there being added to this charge, in cases where the manufacturer does not supply the duck, the price of the duck.

The shoe manufacturers apply the adhesive to the precoated duck by the use of said machines, and immediately after the application thereof apply the duck to the insoles to be reinforced. These operations are conducted at room temperature and no heat is applied to the adhesive, the duck or the insole.

Although the adhesives used by plaintiff in precoating the duck have all had a large rubber content, they have been made according to different formulae developed from time to time by plaintiff, with especial reference to the purpose for which the material is used. Likewise, the top coat adhesives supplied to the shoe manufacturers by plaintiff, though all having a large rubber content, contain different ingredients. Some, called 'Bostik Top Coat', have been supplied by plaintiff continuously since 1929 to shoe manufacturers. Others, which have been supplied by plaintiff since 1932, have consisted of rubber latex modified by the addition of certain other ingredients, according to formulae developed by plaintiff from time to time, with especial reference to the purpose for which the material is to be used. The name 'Gold Top' is used by plaintiff as a designation of such latex compositions.

B. B. Chemical Company is a wholly owned subsidiary of United Shoe Machinery Corporation.

11. The commercial practice of each of the plaintiff's licensees, Pepperell Manufacturing Company and the H-B Products Company, is similar to the commercial practice of the plaintiff as above described, in that each of these licensees supplies to its trade machines for use in applying the adhe-

sive, the precoated duck, the adhesive to be used as a top coat and applied by the use of the machines by the shoe manufacturer. The procedure followed by the shoe manufacturers using these H-B Products Company materials and Pepperell Manufacturing Company materials and others, is the same as above stated in regard to manufacturers using the plaintiff's materials and machines. The top coat supplied as an adhesive by the Pepperell Manufacturing Company and the H-B Products Company is of the latex type.

Said licensees Pepperell Manufacturing Company and H-B Products Company make a single charge to the shoe manufacturer which is at a rate per web yard of duck precoated by them and supplied to the manufacturers for use in the reinforcing operation, there being added to this charge, in cases where the manufacturer does not supply the duck, the price of the duck.

Customers of the H-B Products Company and of the Pepperell Manufacturing Company use no heat in carrying on the process."

"12. It is further stipulated that if the defendant Elmer A. Ellis were called as a witness, he would testify as hereinafter in this paragraph stated, and that this stipulation, subject to any objection as to relevancy, shall have the same force and effect as if he had been called and so testified.

That he is treasurer, manager and principal owner of the Magic Tape Company which company is and has been engaged in the manufacture of tapes, cements, and the like for the shoe trade for the last ten years.

He conceived the idea of coating strips of primed Gem duck with commercial latex as it came in drums from the importer and without any processing operation. He had had experience for many years with rubber. The cases of rubber as they came from the Far East up to the last three or four years usually had a stenciled notice cautioning against storage near boilers or steam pipes. It occurred to him that

if heat made rubber tacky it would make latex tacky. He offered to sell his hot latex invention to the plaintiff but nothing came of it.

Then in January, 1938 he began the development of a machine to heat commercial latex and to apply it to a strip of primed Gem duck. By the middle of March, 1938, a machine had been developed and was set up for experimental purposes in a storage room on the top floor of the factory of the Commonwealth Shoe & Leather Company, at Whitman, Massachusetts. The Commonwealth Company had given him permission to carry on any experimental work that he desired in their plant.

This machine had two applying rolls, the lower parts of which turned in the heated latex and applied it to the strip of duck. The machine was heated with a 40-watt electric heating unit, and the latex was a 60 per cent concentrated commercial latex. The duck was precoated with a rubber composition made in accordance with the following formula:

200 lbs. of rubber.
200 lbs. of titanox.
7 lbs. of graphite.
2 lbs. of R.P.A. No. 1.

The Gem duck that was to be used in the experiments was coated by Peters Manufacturing Company, at Wollaston, Massachusetts, with the cut milled compound rubber.

He cut and formed the insoles at the Commonwealth plant and marked them so that they could be followed through the later operations in the plant, such as inner sole trimming, lasting and welting. He had the usual trouble in cleaning the machine but none in the cutting, trimming or later shoe manufacturing operations. Very good shoes were made from insoles reinforced by his machine and materials.

He then began to develop a one roll machine which had one less roll to clean. Such a machine had also very much

less resistance to the operator's pulling. He made a one roll machine which was operated, and in the course of operation it was found that there was always a blank spot on the duck at the start of the operation where the latex had run off the applying roll. To overcome this he put gum tragacanth in the latex. This material made the latex thicker so that it would not run off the roll.

The new one roll machine was operated experimentally for some time with the thickened latex. Insoles were marked as before and followed through the later shoe making operations.

On or about April 22, 1938, the machine and process had been given sufficient tests to prove its commercial value, and the Commonwealth Company instructed Magic Tape Company to set the machine up in the sole leather room at the Whitman plant, and also to hurry up a second machine for their plant at Gardiner, Maine. This was done. The first machine was moved from the storage room on the fifth floor to the sole leather room on the first floor on or about April 22, 1938. A second machine was sent to Gardiner, Maine, and set up there in the Commonwealth Company's plant on or about May 1, 1938.

Other machines were put in about this time.

Two machines were shipped to Maine, May 11, 1938, one to R. P. Hazzard Company, at Augusta, Maine, and one to the Gardiner Shoe factory at Gardiner, Maine. These machines differ somewhat from the Commonwealth machines. They were duplex machines adapted to coat two strips, but each coating unit had a single coating roll. These machines were set up by Mr. Hawley and a bale of duck was supplied each company. In each factory the Magic machines were run side by side with the plaintiff's machines, using Gold Top top coat. He did not observe the operation of these machines.

On May 17, 1938, one duplex machine with a single coating roll in each coating unit was sent to J. M. Herman Shoe Com-

pany, at Millis, Massachusetts, for trial. The Herman Company makes a patented inner sole in which the rib is canvas and not leather. It is much harder to get a good initial adhesion between canvas and canvas than between canvas and leather. Furthermore, there is a hump instead of a channel at the base of the rib and this makes trouble in the Gemming operation.

All these machines had 40-watt heating units when first installed.

A heating unit of 150 watts was adopted as standard in January, 1939. At the same time a thermoswitch was installed.

On or about June 23, 1938, the filler of titanium oxide and graphite was omitted from the milled rubber used for the base or precoat.

Since April, 1938, the defendant, Magic Tape Company, has supplied to shoe manufacturers in the United States, for use in reinforcing insoles, (a) so-called 'gem' duck, precoated by it with adhesive, and slit by it into strips of suitable width for the purpose and packaged in roll form after the adhesive has dried; if the manufacturer desires, he supplies the duck and the defendant precoats and slits it; (b) adhesive to be applied to said precoated fabric at the shoe factory immediately prior to the application of the reinforcing material to the insole; (c) machines suitable for use in applying said adhesive to said strips, the machines being and remaining the property of the defendant; and (d) instruction to operators, servicing of machines, and advice and assistance in the reinforcing operation.

As compensation for the foregoing, defendant makes a single charge to the shoe manufacturer which is at a rate per web yard of duck precoated by defendant and supplied to the manufacturer for use in the reinforcing operation; there being added to this charge, in cases where the manufacturer does not supply the duck, the price of the duck.

The shoe manufacturers apply the adhesive to the precoated duck by the use of said machines, and immediately after the application thereof apply the duck to the insoles to be reinforced. The defendant's machine contains a heating unit. Except for the heat imparted by this unit the operation involves no application of heat to the adhesive, the duck, or the insole.

13. Plaintiff will produce said Clifford and defendant will produce said Ellis at the trial for such further examination or cross examination as parties may desire on the subject-matter of the stipulation or otherwise.

This stipulation is not to be taken as precluding additional evidence offered by either party on the subject-matter thereof."

H. F. LYMAN,
of Counsel for Plaintiff.

WILLIAM GATES, Jr.,
of Counsel for Defendant.

Mr. Gates. We take the position, of course, that Mr. Ellis is not personally liable, and I am having "Magic Tape Company" put in here all the way through.

Mr. Lyman. I will offer in evidence as Plaintiff's Exhibit 1 a copy of the Ellis patent in suit, No. 1,830,428.

[Copy of Ellis Patent 1,830,428 is marked as "Plaintiff's Exhibit 1".]

Mr. Lyman. I will offer in evidence as Plaintiff's Exhibit 2 a copy of the license agreement between the Boston Blacking Company, Inc., which is the plaintiff, and the Pepperell Manufacturing Company, dated January 19, 1932, which has been referred to in the stipulation as to Mr. Clifford's testimony. It is noted that by agreement with counsel for the defendant we have omitted the royalty rate; otherwise it is a correct copy of the document.

[Copy of license agreement between Boston Blacking Co., Inc. and Pepperell Manufacturing Company is marked as "Plaintiff's Exhibit 2".]

Mr. Lyman. As Plaintiff's Exhibit 3 I will offer a copy of the license agreement made between the Boston Blacking Company, Inc.—that is, the plaintiff—and H-B Products Company, dated April 15, 1932, which has also been mentioned in the stipulation, and here again, by agreement with counsel, we have deleted from the document the royalty rate.

[Copy of license agreement between Boston Blacking Company and H-B Products Company is marked as "Plaintiff's Exhibit 3".]

Mr. Lyman. Mr. Gates has asked us to put on the record certain figures representing the number of web yards of duck precoated by the plaintiff and its licensees during the years 1932 to 1937, inclusive, and for comparison figures, if obtainable, showing the total production of welt shoes in the United States during the corresponding years.

Mr. Gates. Yes, welt shoes, both men's and women's.

Mr. Lyman. We have the figures for these years as to the amount of web duck treated by the plaintiff and supplied to its customers for use in this process, also the figures of web yards so treated and supplied by our licensees to their customers on which royalties have been paid. I will give those figures in a column here.

As to the total production of welt shoes in the United States, we have government figures—we have books that you may have—but the government figures appear only every other year, but there are government figures for 1933, 1935, and 1937, and I will state those figures on the record.

For the year 1932 the yardage of duck coated and supplied by plaintiff to its customers was as follows: 1,593,244 yards. During that year the licensees Pepperell and H-B paid royalties on 460,766 yards.

In 1933 the plaintiff's figures were 2,342,947 yards; the licensees' figures were 1,092,349 yards.

In 1934 the plaintiff's figures were 2,071,184 yards—these are all web yards—and the licensees' figures were 900,898 yards.

In 1935 the plaintiff's figures were 2,179,213 yards, and the licensees' figures 1,099,429 yards.

In 1936 the plaintiff's figures were 2,300,755 yards, and the licensees' figures 973,931.

In 1937 the plaintiff's figures were 1,979,522 yards, and the licensees' figures 1,069,128 yards.

Now, for the year 1932 there are no government statistics available so far as we have been able to find, showing the total production of welt shoes in the United States. The government's figures indicate for the year 1933 a total production of welt shoes in the United States of all classes—men's, women's, youths' misses', and so on—of 100,743,949 pairs.

Mr. Gates. Can that be broken down into any subclasses?

Mr. Lyman. I think so, Mr. Gates. I think we have these figures here and you can break them down. They are broken down, I think, in the figures. We will turn over those statistics to you.

Mr. Gates. Thank you.

Mr. Lyman. For 1935 the government statistics indicate a total production in the United States of welt shoes of 116,923,333 pairs, and for the year 1937 the government statistics indicate a total production of welt shoes in the United States of 138,961,933 pairs. I have said, your Honor, we allege that the Magic Tape Company and Ellis are the same thing in substance, that this is a one-man corporation, in effect.

The Court. Won't the defendants agree as to who owns the stock?

Mr. Gates. Yes, your Honor, we will. The defendant admits that Mr. Elmer A. Ellis has 21 shares of stock in the defendant Magic Tape Company, his wife has three shares of stock in the Magic Tape Company, and there is one qualifying share in the name or Alfred Reveau. I believe he is the odd one.

The Court. Twenty-five shares, and how many are outstanding?

Mr. Gates. They are all outstanding.

The Court. That covers your point?

Mr. Lyman. Yes, your Honor.

Mr. Gates. Is that the entire authorized capital stock?

Mr. Ellis. Incorporated for 5,000.

The Court. But outstanding?

Mr. Gates. All the outstanding stock is accounted for, just half of the authorized.

Mr. Lyman. The office of the company is at Mr. Ellis's house.

Mr. Gates. That is correct.

ROGER T. PERKINS (Sworn).

Direct Examination.

Q. 1 (by Mr. Lyman). What is your full name, Mr. Perkins? *A.* Roger T. Perkins.

Q. 2. Your age? *A.* Forty-three.

Q. 3. Where do you reside? *A.* 14 Poole Avenue, Brockton.

Q. 4. You are employed by the plaintiff, B. B. Chemical Company? *A.* I am.

Q. 5. What is your job? *A.* I am a salesman.

Q. 6. You have to do with the—

The Court. Employed by what company?

Mr. Lyman. With the plaintiff, B B. Chemical Company.

Q. 7. Do you have to do with this process of reinforcing insoles? *A.* Yes.

Q. 8. How long have you been connected with the B. B. Chemical Company? *A.* Since 1929.

Q. 9. Before that what was your occupation? *A.* I was a foreman in a shoe factory.

Q. 10. What shoe factory were you in? *A.* W. L. Douglas Company.

Q. 11. At Brockton? *A.* At Brockton, Massachusetts.

Q. 12. You had been there for seventeen years or so? *A.* Approximately seventeen years.

Q. 13. During your work at the Douglas Shoe factory did you have experience in the matter of reinforcing insoles? *A.* Yes.

Q. 14. Now, I would like you to tell the court what the process

is as it then was used, what sort of machinery was used—First, what is the process that was customary in those days? *A.* The process in those days was what is commonly called the hot coated duck, which is this material on your desk [indicating], and it was a thermoplastic coating. The machine used to apply it was a machine generally heated by steam or electricity, and sometimes in connection with steam hot water, boiling water, was also used, and it was necessary to use a degree of heat well over 200 degrees F. in order to heat up the coating and soften it to a point where it became usable to apply to the insole.

Q. 15. Can you describe to us any machine of the type such as was used in connection with the application of this so-called hot process, not necessarily at the Douglas Shoe Company, but anywhere? *A.* Similar to this photograph that you have here. Here is a machine using hot water and steam. They were both used [handing photograph to the court].

The Court. And the strips of duck would pass down through the water?

The Witness. Yes, and up over the curved heated steam jacket.

The Court. What is down here?

The Witness. This is all water.

Mr. Lyman. Your Honor, the duck has been precoated with this thermoplastic adhesive, and this is the machine that prepares it.

The Court. But it did have the precoated duck there through hot water?

The Witness. And over the curved, heated jacket.

The Court. This was heated [indicating]?

The Witness. Yes, very hot.

Q. 16. How was that plate heated, that curved plate? *A.* On that particular machine it was heated by steam,—about 40 pounds pressure.

Q. 17. Why was that curved plate made so long? *A.* That curve has been so made, so long that the operator working at this end of the machine in pulling off the duck and applying the in-

sole, it gave them room, the result of which was that it would have time enough for this coating here to become heated and soft ready for application.

Mr. Lyman. I will offer in evidence photograph produced by the witness as Plaintiff's Exhibit 4. This is another view of the same machine?

The Witness. Yes.

Mr. Lyman. And another view of the same machine will be included as part of this exhibit. We will have both photographs as part of the same exhibit.

[Photographs of machine produced by witness is marked as "Plaintiff's Exhibit 4".]

The Court. On that process there was a second coat applied?

The Witness. No.

The Court. Your first coat?

The Witness. That was all coated, and this needed to be heated [indicating].

Q. 18. What was your experience with the hot process, in so far as its disadvantages were concerned? *A.* Well, the hot coated duck had to be applied as soon as possible after it was drawn from the heater, while it was still hot and pliable, and it was advisable wherever possible to put that insole through the reinforcer before it had cooled, before it got cool, in order to set it down as well as you could. The hot coated duck—the coating was of a type that would deteriorate, was apt to go bad and couldn't be allowed to lay around too long because it had to be used up so there would not be any loss entailed, and sometimes we would have rolls coated, that had been rolled up too green that stuck to themselves, and it was very hard for the operator to pull off the machine, sometimes so bad it had to be thrown away, causing us to lose the value of the coating as well as the fabric, and also during the course of the insole going into the shoe and through the factory, there were the operations such as lasting the toe of the shoe where heat was also used, and in this operation the worker would sometimes distort and loosen or pull up the coated fabric from the toe

of the shoe and get it out of position in such a way that subsequent operations caused damage.

Q. 19. You mean for other purposes the toe had to be heated? *A.* Yes.

Q. 20. And it had the disadvantageous effect of loosening up this bond at that time? *A.* It did.

Q. 21. That is a toe steaming operation which you referred to? *A.* Yes.

Q. 22. Go ahead. *A.* And also there were, of course, continuous complaints periodically from operators working on this heated machine, especially in the summer months, and they were often getting their fingers or hands or arms burned by coming in contact with it in some way, in handling the fabric, which made it more or less dangerous and uncomfortable for us to use.

Q. 23. Now, it appears from the stipulation that has been read into the record that in 1929 the B. B. Chemical Company began to put out this so-called Ellis process or cold process under the patent in suit. Did you become familiar with that process at that time? *A.* I did.

Q. 24. Was it installed in the Douglas factory before you left? *A.* Yes.

Q. 25. And you soon after that time entered the employ of the B. B. Chemical Company? *A.* Yes.

Q. 26. You devoted your time to the promotion of this process —that is what you had to do? *A.* That is right.

Q. 27. Have you a machine here of the type that was originally used by the plaintiff, supplied to its customers for use in carrying on the process? *A.* Yes, that is the machine there [indicating machine].

Q. 28. Will you demonstrate to the court, please, the manner in which this process was operated by customers? [The witness complies.]

Mr. Lyman. This roll, your Honor, as you see—

The Court. That is precoated.

Mr. Lyman. That is precoated. Before Mr. Perkins begins, you

see we have an apparatus in which there is a roll of this precoated duck which is to be used in reinforcing the stack of insoles lying on the table here, and we have a supply of this adhesive to be used as the top coat in a can on the standard attached there, in which there is a valve at the bottom.

The Witness. There is no valve here.

Q. 29. Explain that. *A.* This is just an open nozzle which feeds from the neck of the can, and when inverted it feeds down on the canvas by gravity feed. The adjustments are made by these plates. The canvas was withdrawn from the machine like that and the insole laid on [demonstrating].

Mr. Lyman. The witness demonstrates with this apparatus, doing the reinforcing on four insoles. Does your Honor care to see those? They are sticky.

Q. 30. Now, what is the tool that you have in your hand? *A.* This is one kind of a hand forming tool, simply a piece of bone.

Q. 31. Following this operation which you have demonstrated here, what is done by way of further treatment of that reinforcing material? It has got excess material on it. *A.* This is trimmed off even with the top edge of the lip by running it through the reinforcing machine, which cuts this off even with the line there all the way around.

Q. 32. That reinforcing machine also does something else, doesn't it? *A.* It does. It tends to set down into the bottom of the channel and adjacent inside face of the lip the coated fabric.

Q. 33. It is a regular machine called a reinforcer that does that? *A.* Yes.

Q. 34. It automatically applies this pressure which you speak of? *A.* Yes.

Q. 35. And trims off the surplus material around the edges? *A.* Yes.

Mr. Lyman. I offer in evidence the apparatus which was used by the witness in making this demonstration as Plaintiff's Exhibit 5.

Q. 36. This is an example of what is called the Bostik precoating and Bostik top coating? *A.* Yes.

[Machine used in Bostik process is marked as "Plaintiff's Exhibit 5".]

Mr. Lyman. The stipulation says, I believe, that that is formed with rubber dissolved in a solvent.

The Court. Is that coating made according to the patent?

Mr. Lyman. Yes, in general, your Honor. I can't speak for the precise formula, but it includes a large body of rubber, a filler, and some resinous material.

Q. 37. Now I would like you, Mr. Perkins, to produce the type of apparatus such as you are now using in connection with the so-called Gold Top materials.

Mr. Lyman. Those, your Honor will remember, according to the stipulation, are of the latex type.

Q. 38. This machine, Mr. Perkins, includes some sort of a control valve? *A.* A valve, yes.

Q. 39. What is the reason for that valve, which was not present in the older machine? *A.* This coating is less viscous than the one used in this machine here.

Q. 40. Than that used in the machine which you have just demonstrated? *A.* Yes. And these valves are simply used to prevent leakage when the machine is not in use.

Q. 41. The pulling of the strip of duck across operates to open the valve automatically, does it? *A.* Yes.

Q. 42. And you have here on this machine a roll of precoated duck, with the precoating of the so-called Gold Top type? *A.* That is correct.

Q. 43. And in your container you have some of the top coating of the same Gold Top type? *A.* Yes.

Q. 44. Now will you demonstrate, please, the operation of this apparatus in reinforcing insoles? [The witness complies.]

Mr. Lyman. The witness has reinforced four insoles on this apparatus. I will now offer in evidence one of the insoles reinforced by Mr. Perkins in his demonstration of the machine, Plaintiff's Exhibit 5, which is to be marked "Plaintiff's Exhibit 6".

[Insole made by Bostik process is marked as "Plaintiff's Exhibit 6".]

Mr. Lyman. I will offer in evidence as Plaintiff's Exhibit 7 the apparatus last demonstrated by the witness, equipped with the so-called Gold Top materials, which is to be marked Plaintiff's Exhibit 7.

[Apparatus equipped with so-called Gold Top materials is marked as "Plaintiff's Exhibit 7".]

Mr. Lyman. I will offer in evidence as Plaintiff's Exhibit 8 one of the insoles reinforced by Mr. Perkins in his demonstration of this apparatus, Plaintiff's Exhibit 7.

[Insole reinforced on Exhibit 7 is marked as "Plaintiff's Exhibit 8".]

Mr. Lyman. Does your Honor care to see any of this precoated duck, to examine its condition before it comes to the machine?

The Court. Before it is precoated?

Mr. Lyman. No; as it comes to the machine.

The Court. No; I have seen it.

Mr. Lyman. It is the same as you have got there.

Q. 15. Here again, I suppose that the insoles to which this reinforcing material has been applied in the manner you have demonstrated now go to the so-called reinforcer that you spoke of for completion. *A.* Exactly the same procedure.

Mr. Lyman. That reinforcer, your Honor, is indicated by one of the figures of the patent—its general nature. That is in figure 5.

The Court. Yes, I see it. That is the reinforcer. Figure 5 is the reinforcing.

Q. 16. You might explain, Mr. Perkins, to his Honor with reference to figure 5 of the patent, about this reinforcer that you spoke of, and what it does. *A.* This is the reinforcing part.

The Court. Where does the sole go in?

The Witness. This is the insole right there. This is the coated fabric, and it is pressed down in there by this top roll and bottom roll and side roll, and it is trimmed off. There is a little circular

knife right in back of it which trims it off as it passes through there.

Q. 47. May we have this hand tool of yours put in that went with this apparatus? *A.* As soon as I get through with it.

The Court. I assume that the exhibits which are in include the rolls of webbing or duck.

Mr. Lyman. They do, your Honor, yes, sir.

The Court. And those have been pretreated?

Mr. Lyman. That is correct. Pretreated with a dried coat.

The Court. They are all in evidence, then. I don't see that we need to put these in.

Mr. Lyman. And the materials in the containers are also a part of the exhibits.

The Court. All right.

Q. 48. Have you ever used any other kind of apparatus than that you have just displayed, Mr. Perkins, in these operations? *A.* Yes, we have. For a short time we used the roll type machine with less viscous top coating.

Q. 49. What is this machine called to which you referred? *A.* This machine is called the Model 12.

Q. 50. Will you explain to the court how this Model 12 works? *A.* Yes, sir.

Q. 51. What is the material that is being poured in? *A.* That is the top coating, latex.

Q. 52. That is a latex composition? *A.* Yes.

Q. 53. Of a particularly free flowing kind—is that right? *A.* Yes.

Mr. Lyman. Your Honor recognizes it is the old chicken feed.

Q. 54. Explain how this machine was operated, please? *A.* The coated fabric comes up through a slot in the bench and passes over these rolls and out back of that roll and is reversed. When it is pulled it passes over the top of the machine ready for use.

Q. 55. Is the operation of reinforcing insoles the same on this machine as on the other? *A.* The same identical procedure.

Q. 56. Only here you have a different machine and a somewhat different top coat? *A.* Yes.

Q. 57. Well, you might, nevertheless, reinforce some insoles with the material. [The witness complies.]

Mr. Lyman. I offer in evidence the machine or apparatus last demonstrated by the witness as Plaintiff's Exhibit 9, including the roll, the precoated web fed to the machine and the container and the top adhesive.

[Apparatus used by witness together with the precoated web and roll, fed to the machine, and container and top adhesive is marked "Plaintiff's Exhibit No. 9".]

I offer as Plaintiff's Exhibit 10 one of the insoles reinforced by Mr. Perkins in his demonstration of this machine.

[Insole reinforced by Mr. Perkins is marked "Plaintiff's Exhibit No. 10".]

Q. 58. When was this particular machine that you last demonstrated used? *A.* I think it was somewhere along in 1932.

Q. 59. What you have done in demonstrating the use of these machines in all cases is to pull out through the machine first a strip of this material which becomes coated in its passage through the machine, for a couple of feet, maybe? *A.* Yes.

Q. 60. Lay it on the bench, apply first one insole face down to the freshly coated surface, shear off material at the proper point, place the first insole aside and apply a second insole to the next portion of the material, cut it off, and do that with two or three insoles and then with a hand tool form the requisite material about the edges of the lip, is that correct? *A.* Except that I formed each sole after I cut it. You may do it either way.

Q. 61. Now, in these demonstrations have you indicated correctly the practice of your customers in connection with the use of this process of yours? *A.* Yes, sir.

Q. 62. You said that you could either pull out a strip just long enough for one insole—perhaps you better amplify about that. How do they do? Do they pull out from the machine more than enough for one insole or not? *A.* They generally pull out the

fabric perhaps two or three feet long, and they lay each insole on and cut it off. They pull it out so they stand in the same spot all the time while they are cutting. Sometimes they cut off three or four or five soles before they do the forming operation; sometimes they form after each piece of canvas is cut with the particular sole.

Q. 63. But in all cases the forming takes place within a minute or a few seconds of the time when the reinforcement is applied to the inner sole? *A.* Oh, yes.

Q. 64. Do they usually have one operator or two operators do this? *A.* That varies according to the production of the factory. Some factories run teams of two or three operators; small factories generally have one operator who does all the various operations.

Q. 65. In these operations has any heat ever been used by any of the customers? *A.* None whatsoever.

Q. 66. Now, as compared with this old hot process that you have described, what are the advantages of this cold process? *A.* The advantages of the cold process were that the base coated duck would not deteriorate, it could be used on the insole at any time, even as long as a year after it was delivered to the factory, and the fabric and reinforcement was applied fresh to the insole when pulled through these coating machines which resulted in giving us a better bond for a longer period of time because the material used to make the bond would stand up, and it had the added advantage of not becoming loosened in subsequent operations through the factory, especially in the one where the toe was heated to soften the box. It also gave us greater flexibility in the innersole or in the shoe when the shoe was completed because it had no tendency to stiffen up, and it eliminated the heat entirely from the operation and the danger of any burns or injuries to any operators, and also proved to be more economical because it practically eliminated waste in cutting hot duck which was a substantial cost factor in the insole reinforcing department. It was found that the cold process was more economical for that reason to use over the heat

Q. 67. Less cripples in the factory? *A.* I was coming to that. Also it resulted in less cripples in the insole department itself as well as other departments where the operators were working on the insole itself, such as lasting and sewing the welt seam and things of that kind.

Q. 68. By "cripples" you mean defective shoes? *A.* Insoles that were spoiled, or other parts of the shoe spoiled because of the failure of the reinforcement material.

Q. 69. I think you told me there was less shrinkage in the coated duck also? *A.* Yes, that is correct, and in passing that hot-coated fabric over the heater that was in there, there was a loss because it caused a substantial amount of shrinkage to take place from the fact that the fabric was coming in contact with heat and moisture, and there is no shrinkage in the cold process.

Q. 70. I pass to another subject. Have you finished with that? *A.* Yes.

Q. 71. I pass to another subject. It appears from the stipulation that has been put in evidence that the defendant put this process, or alleged infringing process in operation at the Commonwealth Shoe Company in Whitman in April, 1938. Did you at or about this time see the Magic Tape apparatus and materials at the Commonwealth Shoe Company at Whitman and watch them in use? *A.* Yes.

Q. 72. When did you first see that apparatus at the Commonwealth Shoe and Leather Company factory at Whitman? *A.* The first time I saw the apparatus was April 20, 1938.

Q. 73. You were there several times subsequently? *A.* Several times after that, and in May.

Q. 74. What kind of an apparatus did they have there? What was the Magic Tape Company's apparatus at that time? *A.* At that time the apparatus was similar to what you have here.

Mr. Lyman. Just a moment. May I note, your Honor, the defendant has produced in court here a machine which I take it to be its present machine--isn't that correct, Mr. Gates?

Mr. Gates. That is right. That is our present machine.

The Court. That is the one he saw in 1938?

Mr. Lyman. It differs from that. I will ask the witness to indicate in what respect that differs. Will you, Mr. Perkins, tell us in what respect the apparatus you saw, the Magic Tape Company apparatus you saw in April, 1938, at the Commonwealth Shoe Company, differed from this apparatus that the defendant has now produced in court, which is here on the table before you?

The Witness. The machine I saw there at that time did not have this water fountain attached to it, and it didn't have this thermostatic switch and it didn't have the same size heating unit as this one has.

Q. 75. Was it the same general type of apparatus, this roll type of apparatus? *A.* Yes, it was.

Q. 76. This particular apparatus we have here carries a name plate which says "This machine is part of a process of gemming innersoles. The process requires that the emulsion used in the machine be kept at a heat of about 120 degrees. The machine is loaned with the understanding that the above instructions will be carried out. Property of the Magic Tape Company, Medford, Massachusetts." Did that plate appear upon the machine that you saw? *A.* No.

Q. 77. You obtained samples of the materials that were being used with this apparatus that came from the Magic Tape Company at that time? *A.* Not at that particular date in April.

Q. 78 On what date did you get such samples? *A.* May 24th.

Q. 79. Can you produce those samples? *A.* I have those here.

Mr. Lyman. The witness produces a jar and a roll of duck.

Q. 80. Those were obtained by you, you say, at the Commonwealth Shoe Company, May 24, 1938? *A.* Yes, sir.

Mr. Lyman. I offer these in evidence, the roll of duck as Plaintiff's Exhibit 11, and the jar of adhesive material as Plaintiff's Exhibit 12.

[Roll of duck obtained by witness at Commonwealth Shoe Company, May 24, 1938, is marked "Plaintiff's Exhibit No. 11".

[Jar of adhesive material obtained by witness at Commonwealth Shoe Company, May 24, 1938, is marked "Plaintiff's Exhibit No. 12".]

The Court. The roll was pretreated?

Mr. Lyman. Precoated.

The Court. And the jar contains what?

Mr. Lyman. Adhesive top coating.

The Court. That was put on through the machine?

Mr. Lyman. That was put on through the machine, yes.

Q. 81. There was a heating unit in that apparatus, was there? *A.* Yes, sir.

Q. 82. That was immersed in water in a tray below the tray in which the latex was contained? *A.* Yes.

Q. 83. And was that heating unit the same as the heating unit in this device? *A.* No, sir.

Q. 84. You say there was no thermostatic switch? *A.* No thermostatic switch.

Q. 85. You were there several times during that month and the following month, you say? *A.* Yes.

Q. 86. Did you at any time measure the temperature of the latex, that is, of the adhesive which was used in that machine and, if so, please tell us where and when you made the temperature measurements? *A.* Yes, sir, I did. On April 20, 1938, I measured the temperature of the latex top coating in the machine and found it registered as 78 degrees Fahrenheit. I also measured the temperature of the latex at a later date, on May 16, 1938, and I found the temperature of the latex top coating—

Q. 87. In the machine? *A.* In the machine, to be 84 degrees F. I measured it again on May 18, at the same factory, and I found the latex top coating in the machine to be 75 degrees F.

Q. 88. Now, do you know, by the way, what the temperatures of the air in the room were in the factory on these several dates? *A.* Yes, sir.

Q. 89. Did you make a record of it? *A.* Yes, sir.

Q. 90. What was the air temperature on April 20? *A.* On April 20 the temperature of the air was 79 degrees F.

Q. 91. And on May 18 what was it? *A.* On May 18 it was 71 degrees F.

Q. 92. I don't mean May 18—May 16, the day you went there? *A.* May 16 it was 80 degrees F.

Q. 93. May 18 you said it was what? *A.* May 18 it was 71.

Q. 94. Now, did you at the time you made this, took the temperatures of the latex which was in the machine, did you ascertain what the temperature of the water bath in the machine was? *A.* Yes, I did.

Mr. Lyman. Your Honor, you understand there is water underneath this [indicating]?

The Court. Yes.

Q. 95. What measurements did you make, and what did you find to be the facts in that regard? *A.* I took the temperature of the water on the 16th of May, and I found it was about 98 degrees F., and again on May 18 I took the temperature of the water at the Commonwealth factory, in this machine or one like it, and found it to be 92 degrees F.

Q. 96. Are these all the temperature measurements that you made of the latex in the defendants' machines at any time before June 16, 1938? *A.* Yes, sir.

Mr. Lyman. I speak of that date, your Honor, because that is the date of the filing of the bill.

The Court. Where was the latex?

The Witness. Down in the open part of the machine [indicating].

The Court. And underneath that is a chamber for water?

The Witness. Yes, sir.

The Court. The water is there [indicating]?

The Witness. Yes.

The Court. The whole thing heats the latex, and the latex is in there [indicating]?

The Witness. Yes.

The Court. And that is heated by water in the heating compartment underneath?

The Witness. Yes.

Mr. Lyman. The water is heated by the heating element and the water transmits the heat to this in here, and the latex is in here [indicating].

The Witness. The latex is constantly being removed by the operator as he takes it off the feeds, and he replaces it.

Q. 97. At the time when you made these temperature measurements was the apparatus running, being operated in its regular course? *A.* The process was being used at that time in commercial practice.

Q. 98. The heat being presumably on? *A.* Yes.

Q. 99. And you stepped in while the operator was operating it in the usual practice, and made the measurements? *A.* That is correct.

Q. 100. Will you explain what the procedure was in the use of this machine by the operators there? *A.* The procedure was exactly the same as I have shown you in these demonstrations.

Q. 101. That is to say, the operators drew through this machine a strip of this precoated duck? *A.* Yes.

Q. 102. In a suitable length for use in reinforcing the insole, then he placed the insole face down on it, cut it off, formed it and put it through the reinforcer? *A.* Not in that particular factory. The operator cuts off the duck, forms it, piles them up together, and they are later put through the reinforcer by another operator.

Q. 103. Can you estimate about how much latex or adhesive, or whatever it was there was in the storage jar in this apparatus, as you saw it at the Commonwealth Shoe Company? *A.* This was, I should say, a larger container and it was practically full. I don't know just how full.

Q. 104. What do you suppose is the capacity of the tray? How much latex is there in the tray when it is in operation? *A.* I should think about a quart.

Q. 105. And it does not come up anywhere near to the center

of the roll, does it? *A.* No. The roll is just immersed there perhaps about one-quarter of its area.

Q. 106. And the capacity of the water tray is about the same as that of the latex tray, is it? *A.* I would say so, yes.

Q. 107. At some time or other you saw a nameplate on one of these machines out at the Commonwealth Shoe and Leather Company, didn't you, Mr. Perkins? *A.* Yes.

Q. 108. At some time during that period? *A.* Yes, sir.

Q. 109. When did you see that nameplate? *A.* On May 9, 1938.

Q. 110. Do you remember what it said on May 9, 1938? *A.* Yes, I do.

Q. 111. What was it? *A.* The plate read as follows: "Magic Tape Machine, Patent Applied For. This machine is part of a process for gemming innersoles. The process requires that the emulsion used in this machine be kept at a heat well above room temperature. This machine is loaned with the understanding that the above instructions will be carried out. Property of the Magic Tape Company, Medford, Massachusetts", and a space on the other side for the number of the machine.

Q. 112. You say the soles that were being reinforced were being sold in regular commercial practice, made in regular commercial production at that time? *A.* Oh, yes.

Q. 113. They appeared to be properly reinforced, did they? *A.* Yes, sir.

Mr. Lyman. That is all; your witness, Mr. Gates.

Cross Examination.

X-Q. 114 (by Mr. Gates). When you were with the Douglas Company, Mr. Perkins did you have any experience in the operation of applying gem[illegible] to insoles? *A.* Some, yes.

X-Q. 115. What? *A.* Supervising it, and sometimes making up odd insoles in case lots occasionally.

X-Q. 116. Did you ever, other than making up a few odd lots, coat and form and trim according to the operations in the manner you have just shown? *A.* Not to earn my living at it, no.

X-Q. 117. The room in which these operations are carried on is the sole leather room, isn't it? A. It is a part of the sole leather room.

X-Q. 118. A part of the sole leather room? A. Yes.

X-Q. 119. Were you foreman of the sole leather room by any chance? A. I was in the insole department.

X-Q. 120. The insole department? A. Yes.

X-Q. 121. Foreman? A. Yes.

X-Q. 122. So that all these operations were under your supervision? A. That is correct.

X-Q. 123. Do you know what material was used in coating according to the hot process of those machines shown like this, Plaintiff's Exhibit 4, which is the hot machine? A. Some kind of a rubber adhesive.

X-Q. 124. Do you know what kind? A. No, I do not.

X-Q. 125. Now, you have operated on some coated duck here today with various top coats of the plaintiff, have you not? A. Yes.

X-Q. 126. Do all those precoated ducks have the same base coat? A. They do not.

X-Q. 127. Now, you have operated on the old Bostik machine. What was the base coat on that? A. That was the Bostik base coat.

X-Q. 128. What was the Bostik base coat? A. That was a type of rubber compound.

X-Q. 129. What was that rubber compound? A. I don't know.

X-Q. 130. Do you know what the Bostik top coat was? A. No, I do not.

X-Q. 131. Now, you also operated other machines with precoated fabric. Do you know what the base coat, the precoat was on those fabrics? A. The one used with the other machine—those two other—was a type of latex or rubber base coat.

X-Q. 132. Base coat? A. Yes.

X-Q. 133. What is the composition of that base coat? A. I don't know.

X-Q. 134. Do you know the composition of the top coat that was applied? *A.* No, sir.

X-Q. 135. Now then, you said that you went to the Commonwealth Shoe & Leather and observed there the operation of one of these machines. *A.* Yes.

X-Q. 136. Do you recall now the position of this roll, for example, on the top of the machine? Was that in the same position? *A.* I couldn't say precisely.

X-Q. 137. Underneath the roll is a strip of metal. Do you know the purpose of that? *A.* That, I presume, is to probably even up the amount of coating that goes on to the fabric.

X-Q. 138. The sort of a spreader part or stripper part? *A.* Yes.

X-Q. 139. Do you recall the position of that bar on the machine you saw? *A.* I don't know whether there was even one on it.

X-Q. 140. Now then, you said that the machine had a heating unit and it was a 40-watt unit. How did you know that? *A.* I don't think I said it was a 40-watt. I think I stated that there was a heating unit on the machine.

X-Q. 141. You don't know the size of the heating unit on that machine you saw? *A.* Not specifically.

X-Q. 142. At the Commonwealth Shoe & Leather Company? *A.* No.

X-Q. 143. With the exception of the first machine that you saw down there on your first visit on April 20, that had no nameplate, had you ever seen one of these defendant's machines, of the Magic Tape Company, without a nameplate? *A.* I can't recall that I have.

X-Q. 144. When you took the temperature, what kind of a thermometer did you have to take the temperature with? *A.* Well, I have that here. I don't know as I can see the name on it.

X-Q. 145. That is all right. It was not the kind of a thermometer that you hang out on the front porch to take the weather? *A.* Oh, no.

X-Q. 146. Would you with a pencil demonstrate how you took the temperature of the latex? How far did you get the bulb of that thermometer in? A. Down to the point where I could feel it on the metal.

X-Q. 147. Put it right on the bottom? A. Not actually on the bottom, but just to the point where I felt it on the metal, and just raised it slightly, just a hair.

X-Q. 148. Just a hair? A. Yes.

Mr. Lyman. Could you put in the note as to the position it was taken?

The Witness. I moved it around.

Mr. Lyman. The witness demonstrates by putting his pencil within the chamber in which the roll is located.

X-Q. 149. Now, you have described how you took the temperature on every occasion on which you took the temperature of the latex—is that correct? A. That is correct.

X-Q. 150. How did you take the temperature of the water? Down in the water jacket down below? A. I asked the operator to allow me to lift this part of the machine up so that I could get the thermometer down in the water, which he did.

X-Q. 151. Where did you have the bulb of the thermometer in that case? A. Immersed in the water.

X-Q. 152. On April 20, 1938, you went around to the plant of the Commonwealth Shoe & Leather. What time in the day was it? A. About 11.40 A.M.

X-Q. 153. Now, you are referring to what in giving your testimony? You just referred to something in making that answer. A. Yes, I am referring to my personal notes.

X-Q. 154. Were they made at that time? A. Yes.

X-Q. 155. That was at 11.30 A.M.? A. About 11.40 A.M.

X-Q. 156. 11.40 A.M.? Pardon me. You went to the Commonwealth Shoe & Leather on May 16, 1938? A. I did.

X-Q. 157. What time did you go there? A. I was there at about 1.45 P.M.

X-Q. 158. You were again refreshing your recollection by reading from notes? A. Correct.

X-Q. 159. Which you made at the time? A. Yes.

X-Q. 160. Right there and then? A. Yes.

X-Q. 161. Now, you went around to the Commonwealth Shoe & Leather on May 18, 1938. At what time of day was that? A. That was about 7.30 A.M., in the morning.

X-Q. 162. What time does the factory begin operation? Do you remember? A. I believe it starts at 7.

X-Q. 163. Starts at 7? A. Yes.

X-Q. 164. Again you are refreshing your recollection with notes you made at the time? A. Yes, sir.

X-Q. 165. Now, you also gave the legend that was on the nameplate on the machine when you were there on May 16, 1938. Did you make a copy of that? A. That was May 9.

X-Q. 166. May 9? Pardon me. A. I did make a copy of it, yes, sir.

X-Q. 167. You made a copy at the time? A. Yes, sir.

X-Q. 168. In giving your testimony you read off that legend as copied by you? A. Yes, sir.

[Recess until 2 P.M.]

AFTERNOON SESSION, 2 P.M.

X-Q. 169 (by Mr. Gates). I have here, Mr. Perkins, Plaintiff's Exhibit 12, which is the bottle of top coating you took at the Commonwealth Shoe and Leather Company? A. Yes, sir

X-Q. 170. When did you take that? A. May 24, 1938.

X-Q. 171. And in whose handwriting is this label? A. That is my handwriting.

X-Q. 172. When did you put that on there? A. As soon as I had returned to our Cambridge office with the samples I put that on so as to identify it.

X-Q. 173. You used your fountain pen? A. Yes—the pen I had at that time.

X-Q. 174. Where did you get that material? A. From the Commonwealth.

X-Q. 175. What part of the machine? A. I took that, after getting Mr. Weldon's permission, from the can from which the operator was using the coating for the machine.

X-Q. 176. May I see your notebook, please? A. These are the notes [handing book to Mr. Gates].

X-Q. 177. How long was it before you got back to the factory to label that bottle? A. I think I went back that same day, if I recall it correctly.

X-Q. 178. Now these notes that you made, you made right at the time? A. These particular notes are copies of the notes that I made at the time. I am sorry if I gave you that impression. These were not the originals. The originals I have here [indicating], but they are hard to find.

X-Q. 179. Will you find May 24 for me on the original notes? A. Yes, sir, right here [indicating].

X-Q. 180. When were these copies made? A. Oh, I should say that I perhaps made those about a week ago.

X-Q. 181. They are true and correct copies of the notes in the original notebook? A. Quite. There may be a word or two perhaps, but as far as I know they are the same.

X-Q. 182. Where are your notes for the other visits you made? This was May 24. You made a visit on April 20?" A. The original was in that book there [indicating].

X-Q. 183. Will you find them for me, please?" A. Yes, sir [indicating].

X-Q. 184. They are all in pencil, aren't they? A. Yes, sir.

X-Q. 185. Now, this Bostik cement, that had naphtha in it, had it not? A. I think so.

Mr. Lyman. I couldn't hear that, Mr. Gates.

Mr. Gates. This Bastik cement had naphtha in it?

A. I believe it has.

X-Q. 186. You are familiar with the smell of naphtha? A. I don't know as I am very familiar with it.

X-Q. 187. Isn't it a fact that this latex you have experimented with this morning, the gold top, also has naphtha in it? *A.* I don't know that.

X-Q. 188. You haven't detected the odor of naphtha about it? *A.* I cannot say that I have.

X-Q. 189. You were describing this morning some disadvantages of the hot process. Wasn't one of those disadvantages the inflammable nature of the cement that was used? *A.* I couldn't say it was. I do not know of anything in there that was inflammable.

X-Q. 190. Do you know the names of the operators that were operating this machine when you were there at the various times at the Commonwealth Shoe and Leather Company? *A.* I know one.

X-Q. 191. Who was that? *A.* Margaret Stoddard.

X-Q. 192. What did she do? *A.* She cut off and formed in the canvas.

X-Q. 193. I believe you said that the heating unit in this machine is bigger than the heating unit in the machine you saw at the Commonwealth back in April or May, 1938, is that correct?

Mr. Lyman. Just a moment, Mr. Gates. Identify this machine.

X-Q. 194. The machine on the stand before you, which is the present commercial type of Magic machine. That present commercial type has a larger heating unit than the one you saw in April or May down in Whitman? *A.* I believe it has.

X-Q. 195. Did you see the heating unit there in the machine at Whitman? *A.* Yes, sir.

X-Q. 196. How did you see it? *A.* When I took the—got to measuring temperature I lifted the tray of latex to take the water bath temperature.

X-Q. 197. Did you say on your direct that the heating unit they used then was smaller than the one used in the present commercial machine? *A.* I think I did.

X-Q. 198. How did you know it was smaller? *A.* I think that its length was shorter.

X-Q. 199. You observed that when you looked in the machine to take the temperature of the water? A. As far as I could see.

X-Q. 200. How high did you lift the pan when you took the water temperature? A. I don't know—high enough so I could see into this part in here underneath.

X-Q. 201. How high was the water in the water tank, do you recall? A. I should say that it was perhaps something more than one-half an inch deep.

X-Q. 202. It was touching the top of the latex pan, wasn't it? A. Yes.

X-Q. 203. Now you say these machines at Whitman, you saw these machines at Whitman before the bill was filed on June 16, 1938, these machines of the Magic Tape Company? A. Yes.

X-Q. 204. Before the bill was filed did you see any machines of the Magic Tape Company in any other shoe factory? A. I don't think so.

X-Q. 205. Did you see machines at the R. P. Hazard Company in Augusta, Maine? A. I don't think I saw them before the bill was filed.

X-Q. 206. Will you say positively that you did not see them? You may refresh your recollection. A. I didn't see them at the R. P. Hazard factory.

X-Q. 207. Did you see them at the factory of the Gardiner Shoe Company in Gardiner, Maine? A. No, sir.

X-Q. 208. Did you see them at the factory of the J. M. Herman Shoe Company in Millis, Massachusetts? A. No, sir.

X-Q. 209. Did you see them any other place?

Mr. Lyman. Your questions all relate to the period before the filing of the bill?

Mr. Gates. They are all restricted to the period before the filing of the bill.

A. No, I did not.

X-Q. 210. When you took the temperature of the latex, the water, and the room, on these three occasions about which you

have testified at Whitman, did you use the same thermometer? *A.* Yes, sir.

Mr. Gates. No more questions, your Honor.

Redirect Examination.

Q. 211 (by Mr. Lyman). I wish you would explain to us, Mr. Perkins, how the precoated duck is fed through the defendant's machine, or was fed through the machine that you saw in use at the Commonwealth Shoe Company. Perhaps you can explain by reference to the machine that is here in court. *A.* The duck comes up through a slot in the bench here and over this roll, and under this device here, and it runs down underneath that. Then it passes over this roll here which feeds latex to it. And I think that it goes--I am not certain if it goes over or under this; I believe it goes under, and then out through this one, out on to the bench.

Q. 212. Will you demonstrate with a loose piece of this, Plaintiff's Exhibit 11, just to show his Honor? *A.* It comes up through here and under that [indicating]. I am not certain about that, but I think it goes underneath it.

The Court. It would have to if it was back of the spreader, wouldn't it?

The Witness. I think that is correct. Then over this one and out on to the bench.

The Court. How does it come in contact with the solution underneath?

The Witness. It is spread on by this roll, which revolves.

The Court. That roll runs through the latex?

The Witness. Yes, sir. It carries it on to the fabric.

Q. 213. Was the coating of cement on the precoated fabric dry? *A.* Yes, sir.

Mr. Lyman. I would like to have this machine offered for identification. I presume you are intending to put it in.

Mr. Gates. I will put it in right now, Mr. Lyman, if I may.

Mr. Lyman. All right, if you will.

Mr. Gates. As Defendant's Exhibit A.

Mr. Lyman. That is the defendant's present commercial type of apparatus?

Mr. Gates. That is correct.

[Defendant's present commercial type of apparatus is marked as "Defendant's Exhibit A".]

Q. 214. I suppose you don't know in detail, of your own knowledge, the nature of these various materials that are used in these processes, do you, Mr. Perkins? *A.* No, sir, I do not.

Q. 215. Likewise, you don't know the nature of the material that was used as the thermoplastic in the old hot process? *A.* No, sir.

Q. 216. Is it true that in these operations the adhesive, the top coat that is applied by your company, is chosen with reference to the base coat that is used on the duck, and vice versa? *A.* Yes, sir.

Q. 217. They are related? *A.* They are. They have a definite affinity.

Q. 218. They must suit each other? *A.* Yes, sir.

Q. 219. How about the machine? Is the machine especially adapted for use with the kind of adhesive that you are supplying? *A.* Yes, sir, it is.

Mr. Lyman. These machines, if your Honor please, are covered by machine patents, and I would like to just put those in the record. I don't know as it makes any difference. Perhaps we will reserve that until a later date. I will offer in evidence a copy of the Nash Patent 1,771,388, which shows the type of machine which is in evidence as Plaintiff's Exhibit 5. This will be Plaintiff's Exhibit 13.

[Copy of Nash Patent 1,771,388 is marked as "Plaintiff's Exhibit 13".]

Mr. Lyman. Nash Patent 2,149,307, which I offer in evidence as Plaintiff's Exhibit 14, shows the type of machine which is in evidence as Plaintiff's Exhibit 7.

[Copy of Nash Patent 2,149,307 is marked as "Plaintiff's Exhibit 14".]

Q. 220. Mr. Perkins, Mr. Gates has asked you to show him your entry of April 20, 1938, in your notebook. Will you take that entry and read it into the record in full? *A.* [reading]: "April 20, 1938. Commonwealth Shoe & Leather factory, Whitman. Checked Ellis process on temperature at about 11.40 A.M. Machine had been running with heat on all morning. Temperature latex, top coating in machine, registered 78 degrees F. Room temperature 79 degrees F. Mr. Ballum, foreman, came over as we took the second check on temperature. He looked at thermometer and he had a little trouble reading it. Operator stated that the temperature of latex top coating was up to 80 degrees F. the other day."

Mr. Gates. I object to that as hearsay, your Honor.

Mr. Lyman. This is the record which Mr. Gates called for.

Mr. Gates. I object to the hearsay. I pray your Honor's judgment.

Mr. Lyman. Under all the rules of evidence that I know of, if he calls for the entry it makes it admissible.

The Court. You are entitled to put that in.

A. (continued). "Said Mr. Hawley so stated. She also said she could see no difference in the way the process worked whether heat was on or not. Said duck pulled easier and that she liked machine better than H-B Products machine. Glass container on machine holds about 2 gallons latex."

Q. 221. Now the entry of May 24, which you also showed to Mr. Gates. Will you read that into the record? *A.* [reading]: "May 24, 1938. Commonwealth, Whitman. Obtained quart sample of latex top coating from container used for shipping to factory and out of the one machines are filled from. Asked and received Weldon's permission to take samples. He came over to operator, who showed us the can from which she was taking top coating. We filled jar after shaking up thoroughly. Also received sample roll duck taken directly from machine cloth reel.

This is Commonwealth's own duck, which was sent Ellis for base coating. Samples taken about 11 A.M., May 24, 1938. We felt outside of water reservoir and noticed it to be very cool. Asked operator if the heat was on. She stated she had just put in some more water and it had not warmed up." I have a note here: "Cambridge office to deliver samples to J. D. C." That is Mr. Clifford.

Mr. Lyman. That is all.

Recross Examination.

X-Q. 222 (by Mr. Gates). This material that you ran with the machine, model—what is this machine I have in my hand? *A.* That is Model 12.

X-Q. 223. Model 12. You had a particular latex or rubber adhesive top coat that you used with that? *A.* With that, yes, sir.

X-Q. 224. Is that top coat still being used? *A.* No, sir.

X-Q. 225. When was it discontinued? *A.* I don't know exactly. I think sometime in late 1932 or early 1933.

X-Q. 226. How long had it been used, do you think? *A.* Just a few months.

X-Q. 227. Do you know why it was discontinued? *A.* We wanted to utilize the equipment that we had, if possible.

X-Q. 228. What equipment was that you had? *A.* That was a base the same—like that one there [indicating].

Mr. Lyman. Refer to the number of it, will you?

Mr. Gates. Exhibit 7.

X-Q. 229. Now, it says on here that this Be Be Tex is not inflammable. Is there any like caution or statement on the container of the adhesive of Plaintiff's Exhibit 7? *A.* I think so, but I am not certain.

X-Q. 230. Is there any notation on there, "Not inflammable"? *A.* No, sir.

X-Q. 231. That is an inflammable material, is it not? *A.* I do not know.

Mr. Gates. No more questions.

Mr. Lyman. That is all, Mr. Perkins.

Mr. Gates. May I ask one more question?

Mr. Lyman. Yes.

X-Q. 232. The operator you referred to in your notes of April 20, 1938, is that Margaret Stoddard? *A.* Yes, sir.

JAMES D. CLIFFORD (Sworn).

Direct Examination.

Q. 1 (by Mr. Lyman). Your full name, Mr. Clifford? *A.* James D. Clifford.

Q. 2. Your age? *A.* I am forty-eight.

Q. 3. Your residence? *A.* 125 Saint Paul Street, Brookline.

Q. 4. You are sales manager for the B. B. Chemical Company? *A.* Yes, sir.

Mr. Lyman. If your Honor please, the stipulation this morning as to what Mr. Clifford would say minimizes a great deal the scope of the examination that would otherwise be indicated. I am going to ask Mr. Clifford some questions which your Honor might not understand the force of except as I tell you they have to do with this defense which my brother is raising on the Barber *v.* Leitch principle. That is the subject matter to which I am directing myself.

The Court. Where do I find that case?

Mr. Gates. 302 United States, I believe, your Honor, at 458. It is Barber *v.* Leitch.

The Court. How do you spell that?

Mr. Gates. B-a-r-b-e-r *v.* L-e-i-t-c-h Company, Barber Asphalt Company *v.* Leitch, 302 United States, I believe at 458.

Q. 5. It appears, Mr. Clifford, from your stipulated testimony, that the B. B. Chemical Company has never granted licenses under this Ellis patent to shoe manufacturers except as some sorts of licenses may be inferred or implied from the course of business which has been set forth. Now, I ask you whether any shoemaker

has ever asked you or requested a license under this patent? A. No, sir.

Q. 6. Would it be practicable, in your judgment for a shoemaker to operate this process under license from you? A. No, sir.

Q. 7. Why not? A. The average shoe manufacturer is a small operator to the extent that the average production is five or six thousand pair per day, and those factories neither have any research—no facilities for doing research, neither do they have equipment that would allow them to precoat fabrics at the factory, neither do they have any machine shops that are capable of building machines which would apply a top coating; also if we approached them and they approached us for licenses they would have to check as to the validity of the patent before they would agree to accept licenses and pay the royalties, and the majority of shoe manufacturers prefer not to work on that basis. The precoated duck and the top coating which we manufacture are very definitely tied together. The equipment which we have built has been designed to apply and regulate the flow of top coating over the precoated fabric in such a manner we get the necessary results that are produced, the proper insole, the proper bond on the fabric to the insole, and the shoe factory, the average shoe manufacturer that we quote materials for, look to us for service that we have, expert technicians who really are shoemakers, or so-called innersole men, who know stock and who have been properly trained by us in the technique and adjusting of machines, so that at all times they get satisfactory performance. They look to us for that service and expect it and we supply it to them as part of our responsibility. They also assume if we, by demonstrating our processes, prove we have a satisfactory one to them, that we are perfectly competent to maintain a uniform formula and a method of application of the base material so they won't get into trouble; also we are competent to make top coatings that will run uniform and keep them from other trouble when they use them. It is for those reasons, in my opinion, that no shoemaker has ever applied to us for a license on this process.

The Court. As a matter of fact, they are the customers rather than the licensees?

Mr. Lyman. Another question which I would like to ask him. This is off the record.

[Mr. Lyman addresses the court off the record.]

Q. 8. Is it practicable for your company, Mr. Clifford, to operate under its patent by the method of reinforcing insoles itself, in its own factory and selling the product to the trade? *A.* We never even thought of it. But, answering your question, I would say it certainly is not.

Q. 9. Explain why not? *A.* There are a good many reasons. In the first place the average shoe manufacturer, his lasting patterns vary from one month to another. We would have to go on the market and buy up sole leather of all grades to take care of all these various grades of shoes that are made. Even though we should be inclined to do that a shoe manufacturer would not consider the proposition because of the fact that if we had a centralized plant where we would make all of these insoles to supply shoe manufacturers throughout the country, because transportation and the delay in getting insoles and having them delivered promptly would be out of the question so we would not even consider it—absolutely out of the question, not feasible in any way.

Q. 10. Each shoe manufacturer has his own type of leather and his own lasts? *A.* Depending on the grade of shoe he is manufacturing. He goes on the market and buys a certain grade of leather to make insoles from. Some manufacturers get their sole leather—the majority buy that from concerns who are making a specialty of buying leather and cutting it into sizes and selling at a certain price.

Q. 11. When he is ready to use the insole he wants it right then and there? *A.* That is the reason why he prefers our process. It is there when he gets ready to take the insoles and to apply the canvas without delay.

Q. 12. It appears from this stipulation we entered into this morning that the B. B. Chemical Company customers get their

materials and their machines from you, borrow the machines from you and get their duck and precoating from you, or else buy the duck precoated, and they get their top adhesive from you. It appears also in the case of your licensee H. B. Products Company their customers get all their service from them, and the same with the Pepperell Company and the same with this defendant Magic Tape Company. Is there any reason why it is logical and natural for a shoe manufacturer to get all three of these materials from the one source rather than getting the machine from one source and the base coat from another source and the top adhesive from a third source? *A.* Certainly, because I assume he would want to do business with one concern because of a definite tie-up of the machines with base coating and top coating and the process complete rather than get equipment in one place, base coating some place else, and top coating somewhere else, and if he got into trouble there wouldn't be anyone of the three who could get him right out. They would come in and say "My product is all right. I don't know what is in the base coating, but my top coating is all right", and the top coating man would say his top coating was all right and it must be the base coating, and the shoe manufacturer would be wondering who is to blame, therefore they prefer to do business with one outfit.

Q. 13. Have you any agreement in any form, shape or manner with any of your customers that they shall use only your goods? *A.* No, sir.

Mr. Lyman. That is all.

Cross Examination.

X-Q. 14 (by Mr. Gates). You said, Mr. Clifford, that the small maker, the average small maker, would not consider a license to practice the patented method and prefers to get the unpatented materials that are used in the method from one source? *A.* Yes, sir.

X-Q. 15. Would a large maker operate under your license to practice the patented method? *A.* I don't know whether he would or not. None of them have.

X-Q. 16. Here is a machine, Exhibit 9. Is this a difficult machine to adjust? A. That particular machine is not.

X-Q. 17. It would have been no job to teach the operator how to adjust that, would it? A. No, sir.

X-Q. 18. It would not be any job to get people employed by a shoe factory to adjust that? A. That is right.

X-Q. 19. Here is a machine, Plaintiff's Exhibit 7. Could you have taught shoe factory employees to adjust that? A. We prefer not to do so.

X-Q. 20. Why not? A. Because they are not competent. They are usually put on piece work and in a hurry doing piece work for a day's wage and will not be as careful in adjusting the machines as one of our own technicians.

X-Q. 21. Is there nobody around a shoe factory who can adjust machines? A. We don't know about that.

X-Q. 22. You are not informed? A. I would not say I wasn't informed, but from long experience it is not satisfactory.

X-Q. 23. Have you ever tried it?

Mr. Lyman. Just a minute, Mr. Gates. Let the witness finish his answer.

The Witness. I say we found it not satisfactory, not a satisfactory way.

X-Q. 24. Have you ever tried it the other way? A. We never deliberately tried it, but we have had experience, and our factories have tried to adjust them.

X-Q. 25. With this machine? A. Yes, and found the results very unsatisfactory, and they had to wire and we sent technicians to readjust the machines and get proper results.

X-Q. 26. Is this particular machine, Exhibit 7— A. That is just as comparable.

X-Q. 27. What did you mean when you said on direct, your machines were tied up? In what way are your machines tied up, tied up to the use of your materials?

Mr. Lyman. Just a moment. You ask a question and the wit-

ness starts to answer and you start another question. Let him finish the answer to the first question.

X-Q. 28. Your machines are in fact tied up with the use of your coating, duck and top coating? *A.* They are related.

X-Q. 29. Tied up? *A.* I don't know what you mean by "tied up".

X-Q. 30. Neither do I. You said that. *A.* I meant our machines, the base and top coating and adjusting of the machines is very necessary to be accurate to get successful results with the base coating and top coating, therefore I felt they are tied up with the duck, coating and base coating. That is just an expression.

X-Q. 31. Could the precoated duck of the Pepperell Manufacturing Company be used in your machines with your top coating? *A.* I don't know, sir.

X-Q. 32. Could the precoating or the duck of the H. B. Products Company be used in your machine with your top coating? *A.* I don't know.

X-Q. 33. How about the materials of the Magic Tape Company? *A.* I don't know.

X-Q. 34. Are you familiar with the practice of the McElwain Shoe Company? *A.* I would not say that I was.

X-Q. 35. Isn't it a fact that they do their own precoating job? *A.* That I don't know, whether they do their own precoating or not.

X-Q. 36. Do you know the formula for the present precoating of duck? *A.* Our duck?

X-Q. 37. Yes. *A.* No, sir, I don't.

X-Q. 38. Do you know the ingredients, whether you know the exact proportions or not? *A.* No, sir, I do not.

X-Q. 39. Who does? *A.* I suppose our research division, the head of our research division would, and the head of our manufacturing unit that makes the material.

X-Q. 40. Who are those gentlemen? *A.* The head of our research is Mr. Sidebottom, and Mr. Temple is the superintendent of our plant in Middleton.

X-Q. 41. Your answers would be the same in regard to various top coats? *A.* That is right, sir.

X-Q. 42. Can you tell us whether or not they contain naphtha? *A.* I could not.

Mr. Gates. That is all, your Honor.

Mr. Lyman. That is all, Mr. Clifford.

GUSTAVUS J. ESSELEN (Sworn).

Direct Examination.

Q. 1 (by Mr. Lyman). Your name, please? *A.* My name is Gustavus J. Esselen.

Q. 2. Your age, Doctor? *A.* Fifty-one.

Q. 3. Where do you reside? *A.* In Swampscott, Massachusetts.

Q. 4. Your occupation? *A.* I am a consulting chemist.

Q. 5. Where is your office? *A.* 857 Boylston Street, Boston.

Q. 6. What was your education, please? *A.* I specialized in chemistry for four years at Harvard College and graduated with an A.B. degree in 1909, and then spent three more years in the graduate school at Harvard, specializing in chemistry, and received my doctor's degree there in 1912.

Q. 7. You belong to numerous learned societies, I suppose. Will you tell us about those? *A.* I am a member and a director of the American Chemical Society, a member of the American Institute of Chemical Engineers, and was for two terms a director, am a fellow of the American Academy of Arts and Sciences, a fellow of the American Institute of Chemists, and a fellow of the American Association for the Advancement of Science.

Q. 8. You have examined the Ellis patent with which we are concerned in this case? *A.* Yes.

Q. 9. I wish you would explain briefly the subject-matter of that patent to the court. *A.* This patent, No. 1,830,428, refers primarily to the process of reinforcing insoles. In the major portion of the first page there is presented a discussion of the prior art from which this Ellis process, the subject-matter of this patent,

is to be distinguished. In the first place, the first type of prior art which is described in the Ellis patent is the so-called hot process, where the reinforcing duck was given a coating of a thermoplastic adhesive,—that is, an adhesive which at ordinary temperatures was not tacky but had to be heated to temperatures at least in the neighborhood of boiling water, and sometimes hotter, in order to bring out the adhesive properties. The Ellis process described in this patent, on the other hand, is a cold process. There were other cold processes in the prior art, and in the second column on page 1, beginning at line 57, one of these cold processes is described. This is the second process of the prior art, which is to be distinguished from the process of the patent. In this process, reading at line 62:

> "For example, a strip of duck was drawn through a cement applying device of usual construction by which a single coating of ordinary fluid rubber cement containing a large proportion of solvent was applied to one side of the strip."

Reading on from there:

> "In order for the coating to become tacky (instead of slimy) and thus suitable for use, a large part of the solvent in the cement on the strip was allowed to evaporate through exposure to the air. This exposure of the strip took up a large amount of space in the factory and waiting for the strip to dry consumed an impracticable amount of time."

In other words, there they used a single layer of rubber cement, applied to one side of the duck, and as soon as it reached a proper degree of tackiness it was applied to the sole.

Then in the same paragraph, farther on, reading from line 77:

> "Attempts have also been made to use a strip having a permanent tacky coating much like that of surgeon's plaster."

And that is the third type process of the prior art from which this present process is to be distinguished.

Now, the feature of the Ellis process described in this patent—

at least, one of the features is that, in the first place, the adhesion is accomplished in two steps instead of one step. I will say more about it in just a moment The web of duck, as has already been described here, is given a preliminary coating of an adhesive of such a character that when the solvent has dried out it is not tacky at room temperature and any ordinary temperature and can be rolled up in rolls and unrolled when it is ready for use. That preliminary coating can be applied at a factory, the material can be rolled, slit into any desired length, and when ready and on order can be shipped out and is ready for use. When it gets to the shoe factory the second coating of adhesive is applied. Note that it is applied to the preliminary coating already applied and is not applied to the leather of the sole. However, immediately after the second top coating is applied to the duck, which has already had its preliminary coating, the application of the second coating makes the combination at once adhesive to the leather, so that the minute the leather is brought in contact with this strip of gem duck which has been treated in this way a certain adhesion is almost immediately developed.

It is interesting to note on page 3, line 71—referring back to the preliminary base coat which is given to the duck—

> "The coating thus applied is preferably quite thin, the objects of its use being to fill the pores of the duck so that it will not absorb too much of the second coating," and also "to cement down the loose fibers of the duck, to prevent ravelling of the duck when it is cut into strips, and to afford a surface to which the second coating later applied will readily stick."

The drawings in the patent are to illustrate how the process is to be carried out. Figure 1 is a section of a machine, or, rather, several sections, as is indicated in the drawing, with parts left out of similar construction, but is a machine which can be used for applying the preliminary base coating.

The Court. That calls for heat, doesn't it?

The Witness. Yes, your Honor.

The Court. The preliminary coating.

The Witness. If I may explain how that works. Over at the left you will notice the numeral 8, which is the web of uncoated duck, as it passes up and over the roll 12. The figure 24 indicates a mass of adhesive, the thickness of which is regulated by the doctor plate 18. Then you will notice figure 8 is continued on there over the steampipes 30 and 34. The object of the steampipes 30 and 34 is to dry out the solvent from this preliminary adhesive, in order to make the layer of adhesive non-tacky. The web 8 then continues on over the spreader roll 36, down over that big wheel 38, and then passes the orifice 42 which blows cool air on it to cool it after it has been dried. It is then essentially non-tacky and is rolled up at 44 and 46, over at the left-hand side of the diagram. So that the heat there is not to make it adhesive but to dry out the solvent in order to make it nonadhesive and non-tacky.

The Court. So that when it is rolled on a spool it won't stick?

The Witness. It won't stick to it, sir.

The Court. That is why that is done?

The Witness. That is why that is done. Then figure 2 simply shows a device for slitting this web into any convenient width. Fig. 3 is a diagrammatic representation of a scheme for applying the second coating, which looks like the exhibit on the floor here.

The Court. Which one?

The Witness. I don't know the number. Either like number 7 or this one here. What number is that?

Mr. Lyman. I think it is a little more like Exhibit 5, your Honor.

Q. 10. It does not have the valve? *A.* That is correct, it does not have the valve, but it represents a convenient scheme for applying the adhesive. Figure 5 represents the reinforcing machine. As has already been described, it passes through here in order to bring the web, the gem duck, in contact with this fin which stands up from the sole.

Q. 11. What is the nature of the particular preferred formula that is mentioned in this patent, first as to the precoating and second as to the top coat? *A.* The preferred formula for the precoat is given on page 3 of the patent, beginning at line 21, which reads as follows:

Rubber	65 pounds
Zinc oxide	41 pounds
Burgundy pitch	22 pounds
Naphtha	43 gallons

The formula for the second or top coat is given on the same page, at line 112, and reads as follows:

Rubber	48 pounds
Zinc oxide	48 pounds
Burgundy pitch	60 pounds
Naphtha (high test)	14 gallons

Q. 12. What does the naphtha do in those formulae? *A.* The naphtha is the solvent in which the rubber is dispersed.

Q. 13. In looking back at the first page here of this patent, the first column, he describes the usual practice of the hot process, using thermoplastic material containing gutta percha or gutta siak. What is gutta percha or gutta siak? *A.* They are naturally occurring resins related to rubber. They are somewhat softer and in general more tacky than rubber, but they might be said to belong to the same family. Perhaps they might be described as a lower grade of rubber.

Q. 14. What are the essential features, in your opinion, of the process described in this patent, not limiting it to the preferred ingredients? What are the essential features of it? *A.* The first essential feature is that it is essentially a cold process, as distinguished from the prior art hot process, which had to be carried out at temperatures in the neighborhood of boiling water or steam under pressure. That is the first distinguishing characteristic, namely, that it can be carried out at any ordinary temperatures.

The second distinguishing feature of this process, as I see it, is the fact that it is a two-stage process, in which the two steps of applying the adhesive are confined to one only of the two materials to be joined together. In other words, first the base coat is applied to the duck, which is allowed to dry, and when it is ready for use the second adhesive is applied to the same duck, and there is not anything applied directly to the leather. The first time the adhesive comes in contact with the leather is when the leather is applied to the duck containing the two coats of adhesive. The third characteristic, which in a way is a part of the first one, is that the adhesive is essentially a rubber adhesive.

The Court. In the old hot process there was only one step?

The Witness. That is correct. Your Honor, may I explain that there was only one adhesive which was applied, the only adhesive.

The Court. What was that adhesive?

The Witness. As described here, it was made of gutta siak and gutta percha.

The Court. That is, a thermoplastic material?

The Witness. That is gutta siak, line 20. That is essentially what it was.

The Court. That differs from the formula in the cold process?

The Witness. Yes, because in order to activate that you have to heat it very hot. I mean, up to the boiling point of water or even steam under pressure, whereas under the present scheme activation is entirely at room temperatures, and it is activated by putting on a second coating of a—

The Court. What takes the place of the heat in the old process? Some of the ingredients entering into the formula?

The Witness. The whole thing, the whole scheme of the process is different. Instead of activating that with heat it is activated by the second coating of adhesive, the so-called top coat.

The Court. Some chemical action takes place when the two coats come together?

The Witness. It is hardly a chemical action; it is a swelling action.

The Court. All right.

Q. 15. It appears that the defendants use as their top coat adhesive what they call a bodied rubber latex. Now, what is latex in the first place? *A.* It is a white, milky liquid which is essentially a suspension or dispersion of rubber in water. Natural latex is such a dispersion of rubber in water as it comes from the rubber tree. There are also artificial latices or latexes which are made by taking rubber which has been previously separated from the latex and redispersing it in water again.

The Court. Now let us have the answer to that question. I don't understand that he has answered your question. Has he?

Mr. Lyman. I asked him what latex was in the first place. He has answered that.

The Court. But the question back of that.

Mr. Lyman. Yes, there is a question back of that. That question is, Compare rubber latex with rubber dissolved in a solvent. In what form does the rubber appear in this formula of the patent, and compare it with the form in which rubber appears in rubber latex. *A.* In either of the formulas given on page 3 which I have read in the patent, the rubber is dispersed there in naphtha,—that is, it is dispersed in an organic solvent instead of being dispersed in water. In latex the rubber is dispersed in water.

Q. 16. Now I want to ask you how this material develops adhesiveness in the cold. How does it happen that when you have a rubber dispersed in an organic solvent—first, how does that become adhesive, what makes it adhesive? *A.* You mean, if it were applied simply to a piece of paper, or applied to the under coat such as we are considering here?

Q. 17. It is not adhesive while there is a lot of solvent there, is it? *A.* No. As the solvent evaporates it reaches a stage where it develops tackiness, and finally, when all the solvent is evaporated, a layer of rubber remains.

Q. 18. Now, when you take latex, which you say is a dispersion of rubber in water, and evaporate the water, what happens?

A. You also have a layer of rubber remaining, and that layer of rubber is adhesive to other layers of rubber.

Q. 19. Does that pass through a tacky stage when drying? *A.* That passes through a tacky stage, but that tacky stage is much more limited in its time factor than is the tacky stage when naphtha is the solvent.

Q. 20. Then is it true to say that the adhesiveness which is developed either when you follow the formula as preferred in the patent or when you use latex, is developed by the presence of the rubber forming a sort of film upon the evaporation of the dispersing medium? *A.* That is correct.

The Court. I was interested, Mr. Lyman, in the question which you asked about the defendant's material, and you switched on to something else.

Mr. Lyman. The defendant's adhesive material.

The Court. What do you call it?

Mr. Lyman. I called it the bodied latex.

The Court. Now, what is bodied latex?

Mr. Lyman. The latex which, as described in the stipulation by Mr. Ellis, is the latex to which gum tragacanth was added to make it more viscous.

The Court. You mean, latex as it comes from the rubber tree?

Mr. Lyman. Yes.

The Court. That latex which we have obtained by dissolving with—

Mr. Lyman. I don't know where he gets it, your Honor. He may get it by emulsifying rubber, but more likely does get it as the latex which comes from the rubber tree, and it appears that he used it in concentrated form. It says they originally used 60 per cent latex, and that is in concentrated form, and he added gum tragacanth, he says, because it was not viscous enough, he wanted it to stick to the rolls better. It don't know that we have anything further that we can describe of that material that is in there, except that it is, as stated in the stipulation, rubber latex

The Court. With something added.

Mr. Lyman. With something added to make it more viscous.

The Court. All right, go ahead.

Mr. Lyman. Now, it appears from the stipulation as to the material formerly used for the precoat of defendant's duck that it is this: 200 pounds of rubber, 200 pounds of titanox, which is described as being a form of titanium oxide, 7 pounds of graphite, 2 pounds of RPA-1, all those dissolved in naphtha. It is agreed, is it, Mr. Gates, that in that formula one gallon of naphtha was used to two pounds of that mixture that I have just mentioned?

Mr. Gates. That is correct.

Q. 21. Is that a rubber cement, Doctor? *A.* Yes.

Q. 22. What is the purpose of the titanox? *A.* Well, I presume the purpose of the titanox is to help make it spread more easily and act as a filler.

Mr. Lyman. I don't know that we can be called upon to say what the purpose of these ingredients is, your Honor. That RPA-1 seems to be some designation unknown.

Mr. Gates. May I suggest what it is, with your permission?

Mr. Lyman. I shall be very glad to hear what it is.

Mr. Gates. RPA-1 is a compound made by the DuPont Company, and they call it a peptizer of rubber. It is made under that name, RPA No. 1.

Mr. Lyman. The intention is to enable it to go into solution more readily?

Mr. Gates. Yes, it will do that, I understand, subject to the references, however, and it also permits you to get a very tacky rubber sooner and quicker on milling.

Mr. Lyman. What is the graphite for? Well, however that may be, that is a cement having a substantial rubber content, is it?

The Witness. Yes.

Q. 23. Rubber is the essential feature there, is it? *A.* Yes.

Q. 24. The thing that gives it its adhesiveness? *A.* Its adhesive properties is right.

Q. 25. Now, taking the latex, the bodied latex which they use, which is described as ordinary rubber latex,—is that an adhesive

containing a relatively large amount of rubber? *A.* Yes. I don't recall that they state the concentration of the latex.

Q. 26. Sixty per cent concentration? *A.* Sixty per cent?

Q. 27. Yes. *A.* Then it certainly is cement with a substantial or large proportion of rubber.

Q. 28. Now, this patent refers to room temperature. It says:

> "That improvement in methods of reinforcing insoles which comprises applying, at room temperature, to a strip of reinforcing material provided with a dry coating of a cement having a substantial rubber content, a coating of adhesive containing a relatively large amount of rubber and of such a character that it will be effective even when freshly applied to cause quick adhesion of the reinforcing material and the material of the insole, and applying to each other, still at room temperature, a portion of the coated strip and the insole to be reinforced."

Is that expression "room temperature" anything definite, Doctor? *A.* No; that covers a wide range of temperatures.

Q. 29. Can there be anything critical about any particular temperature in a process which is described as operated at room temperature? *A.* No. That means that it is flexible and can be applied over a reasonable range of temperatures.

Q. 30. Now, it appears from the testimony of Mr. Perkins that the temperatures of the defendant's latex as he measured it at the Commonwealth Shoe & Leather Company in Whitman in April and May, 1938, were 78 degrees Fahrenheit on one day, 84 degrees Fahrenheit on another day, and 75 degrees Fahrenheit on a third day. Are those temperatures room temperatures or are they not? *A.* Yes, those temperatures are all within the range which is generally considered as room temperatures.

Q. 31. It appears from the testimony that also on two of those days he measured the temperature of the water as well as the temperature of the latex, and he found that the temperature of the latex was considerably lower than the temperature of the

water in the water bath where the heater is,—10 or 15 degrees lower. How do you explain that? *A.* Well, I think he also explained that there was a supply of latex feeding continuously into the latex bath as it was being used by being taken out for treating the duck, and the latex which was being added to the supply was at room temperature, and that was presumably cooling off the latex already in the tank. There was also an added reason, that where evaporation of water from the surface of the latex is involved, that the evaporation of the water would have a tendency to keep the temperature of the mass of latex at a somewhat lower temperature than the temperature of the water. Then of course the mass of latex is not completely surrounded by water, and therefore there would be some radiation of heat from the latex container. For all those reasons there would be a tendency for the temperature of the latex to be somewhat lower than the temperature of the water.

Q. 32. You have made some experiments, Doctor, in order to determine whether the temperature of the latex in the bath determines the temperature of the latex at the moment of the application to the duck, have you, with a thermocouple? *A.* Yes. I measured that as soon thereafter as I possibly could.

Q. 33. Now I would like to ask you to explain in detail what these tests mean. Explain to his Honor what apparatus you used in the making of this test and just how you did it, and when. *A.* These tests were made on September 28 of this year, and I had a device similar to this one here, Plaintiff's Exhibit 9. For the purpose of these tests we had latex in the container, which is this here [indicating], but we had the whole container immersed in a water bath so that we could regulate the temperature of the water and thereby regulate the temperature of the latex. I also had a very sensitive thermocouple, and as the duck, the gem duck, which already had the usual preliminary base coating, was being drawn through the latex and came out with the layer of latex adhesive on the surface, I reached down in here with my thermocouple, as near as I could to the point where the latex

was being applied to the duck, and I took the temperature with the thermocouple. I ran several series of experiments on that. In the first one the temperature of the latex in the tray was 68 degrees Fahrenheit, in the second one it was 79 degrees Fahrenheit, in the third one it was 90 degrees Fahrenheit, in the fourth one it was 105 degrees Fahrenheit, and in the fifth one it was 120 degrees Fahrenheit.

Q. 34. Now, let us pause here a moment to explain what you mean by a thermocouple. Just what is a thermocouple. *A.* A thermocouple is a very sensitive device—this particular one was—having two very fine wires, and it was attached to an electrical device, the principle of it being that, according to the temperature to which this metallic joint is subjected, a small electric current is generated and that can be read on a suitable sensitive indicator. It is a recognized type of device for measuring temperatures with a considerable degree of accuracy.

Q. 35. Have you such a device here, the device you used? *A.* This is the device I used.

Mr. Lyman. The witness produces a thermocouple and a Leeds & Northrup potentiometer.

The Witness. Yes.

Q. 36. That is devised to instantly respond to measure temperature? *A.* That responds instantly to changes of temperature.

Q. 37. Where do you read the temperature? *A.* The temperature is read on this dial here.

Mr. Lyman. I don't know whether your Honor cares to know any more about the details of the thermocouple.

The Court. No.

Mr. Lyman. That is a scientific means of measuring temperature?

The Witness. It is much more sensitive than any ordinary thermometer. The sensitive point down here is very small and requires very small heat changes to affect it.

Q. 38. Now you were using in this experiment, you used 60 per cent concentrated latex? *A.* That is correct.

Q. 39. As a matter of fact it was latex that came from the Heveatex Corporation, which was the source of the defendants' latex? *A.* The container was marked 60 per cent Heveatex.

Mr. Lyman. I have a table here which shows the results that the witness got and I think perhaps you better see it.

The Court. I had better have it.

Mr. Lyman. We had better let the witness explain this table and the significance of it.

Q. 40. In your own way you can explain in some detail what the effect of this and this procedure was, and what it shows.

The Court. Where was the latex that you got the temperature from?

The Witness. In the chamber underneath the cover, just exactly as it is at the present time. The latex is in here [indicating].

The Court. This first column is the temperature of the latex?

The Witness. Of the mass of latex in this container here as it was adjusted and before the experiment was started. That is in the first vertical column at the left. Reading across, the first line across, beginning with the figure 68 degrees F. at the left, I have just described how that reading marked zero seconds was taken. The gem duck was being drawn slowly over the roll while Mr. Perkins was pulling it farther over on the table to some soles—

Mr. Lyman. Your Honor will see—in order that you can visualize what was going on, you could see here—

The Court. I think I understand that.

Mr. Lyman. He was drawing it like this [indicating]?

The Witness. Drawing it like this, over this way, so that as the coating of latex adhesive came out Mr. Perkins was working about over in that corner applying soles and I was measuring the temperature over here [indicating].

Q. 41. Measuring at the point where the strip of coated duck emerges from the machine? *A.* That is right. That is the way those figures in the zero seconds column were obtained.

The Court. At the minute it emerged?

The Witness. At the exact moment it emerged from the ma-

chine. Now, your Honor, as a matter of fact on that day I had a longer lead to the thermocouple so I could reach over to approximately where Mr. Perkins was working and by means of a stop watch we were table to time these intervals. Approximately fifteen seconds later the temperature is recorded in the third vertical column under the heading "15 seconds", and the same way "30 seconds", "45 seconds", "60 seconds" and "75 seconds". I might say that the temperature of the room, which should have been recorded here—

Q. 42. It is. *A.* Yes, at the bottom. The temperature of the room on this day was between 79 and 80 degrees Fahrenheit. As a matter of fact it was 79 when we started it and got up to 80 as soon as we finished. In this first series of experiments, your Honor will note we had to cool the latex from room temperature of 79 or 80 down to 68 degrees Fahrenheit. We did that purposely to see what would happen, and as the gem duck emerged from the latex it had warmed about five degrees in that fraction of a second, or whatever the time interval was, it was very soon warmed up five degrees, and it remained within one degree of that temperature for the next 75 seconds.

Q. 43. I will ask there, what in the world could have raised that temperature of that latex so rapidly, Doctor? *A.* That is apparently due to the fact that there is a relatively small mass of latex in contact with a relatively large mass of gem duck, and the gem duck in this case was, as I remember it, 76 or 77 degrees Fahrenheit, and that temperature is considerably higher than the temperature of the latex, 68 degrees Fahrenheit, and in contact with the gem duck it was warmed up. It was not, however, warmed up to the temperature of the gem duck, and I think the reason for that will appear in some of the later tests.

The Court. That goes down quite a bit.

The Witness. In the next test you will notice that the mass of latex was at the same temperature as that of the room in which the experiment was being conducted, and immediately there was a falling off of temperature probably due to the fact that this

thin film of latex also was being chilled very much owing to the evaporation of water. There is considerable water there, and when the water evaporates from that thin film it had a tendency to cool it, and that cooling continued for the next 75 seconds. The latex was by no means dry at the end of 75 seconds. There was considerable water still there, and it was still operating.

Q. 44. Now you carried these temperatures even up to 90 degrees, 105 and 120 degrees? *A.* That is correct.

Q. 45. In order to see what happened on those occasions? *A.* Yes.

Q. 46. What did you find in the case of the 90-degree temperature of the latex? What was the effect of that material from the point of its application to the duck as it was passing through it? *A.* I took the temperature of the latex at 90 degrees Fahrenheit and as soon as I could get the temperature after the latex was applied to the duck it already had cooled 10 degrees Fahrenheit. The temperature being 80 degrees Fahrenheit, and then it continued to cool for the next 75 seconds.

Q. 47. The original cooling there would be largely due to the cooler temperature of the duck, I suppose, would it not, as the larger mass? *A.* It would be due partly to that and due partly to the evaporation of the water which had already started.

Q. 48. I think for the duck by itself you had in that room, it was a lower temperature than the room temperature. You said it was 77 degrees, whereas the room temperature was 79? *A.* That is correct. That duck had been in that room all night, and the temperature of the room during the night was considerably cooler than it was during the day. The fabric of the duck is a poor conductor of heat and it had not warmed up to the temperature of the room at the time I used it.

Q. 49. About the 105-degree temperature, the change when the latex in the bath was at 105 degrees? *A.* As soon as I could measure it, the temperature of the latex on the duck was 88½ degrees Fahrenheit, and in 30 seconds it was down to 76 degrees Fahrenheit.

Q. 50. Then at 120 degrees? *A.* When the latex in the bath was at 120 degrees Fahrenheit, as soon as I could measure the temperature it had cooled to 97 degrees Fahrenheit, and at the end of 30 seconds it was down to 80 degrees Fahrenheit.

Q. 51. Now, Doctor, what does this mean with regard to the commercial operation of this defendant's apparatus with such temperatures as are there set forth?

Mr. Gates. Wait a moment. Finish your question.

Q. 51 (Continuing). Are these temperatures which you measured there as indicating the measurement of the temperature at the nearest point after application of the duck you could find, are those all room temperatures? *A.* Yes, there are all room temperatures. The highest one is 97 degrees Fahrenheit, and admittedly that would be very high, 97 degrees F. but I have been in rooms where the temperature was 97 degrees F. and people working there.

Q. 52. Does this test indicate that the temperature of the web is the thing that controls the temperature or would greatly influence the temperature of the latex at the point of its application? *A.* The temperature of the web influences it very greatly, that is correct.

Q. 53. Why is that to be expected? *A.* Because the mass of the web and the mass of the gem duck is relatively large as compared to the mass of the latex.

Mr. Lyman. We will be glad to offer at this time, your Honor, after the close of court in this court room, to repeat these experiments on defendant's machine, with defendant's product at any of these temperatures, in the presence of the representatives of the defendant. We did not have one of their machines on which we could make that test, but our own test was made under comparable conditions.

The Court. I don't think we need that. Does the application at room temperature or more—have you the application without the intervention of heat applied from some source or other?

Mr. Lyman. It means on this process it doesn't have to have any heat applied.

The Court. If in order to get results the defendant has to apply heat then that would be a very important fact.

Mr. Lyman. I would like them to establish that if they can, your Honor.

The Court. That is what I am interested in.

Mr. Lyman. We assert that these temperatures which they obtained, as measured before the bill was filed, are ordinary room temperatures.

The Court. In other words they get the results necessary without the application of heat.

Mr. Lyman. Get the results necessary without the application of any heat at all, and if they have any evidence to the contrary we should like to hear it and to rebut it when our turn comes. I suppose your Honor doesn't care for expert testimony, the expert witness's opinion as to the infringement of the claim? That is for your Honor to decide?

The Court. No.

Mr. Lyman. I think that claim is perfectly clear. I don't believe it requires any more explanation to be argued. Except for the offer to repeat these tests in the presence of the defendant's witnesses on their own material and on their own machine, I think that is all I have to ask of the witness.

Mr. Gates. We have made tests on our machine, if your Honor please, and we are going to put that evidence in.

Cross Examination.

X-Q. 54 (by Mr. Gates). Doctor, have you ever been in a factory and observed this cutting, forming and trimming operation? *A.* Yes.

X-Q. 55. For the purposes of this case? *A.* Yes.

X-Q. 56. How long were you there? *A.* You mean on each occasion?

X-Q. 57. That is right. *A.* Anywhere from half an hour to an hour, probably.

X-Q. 58. On several occasions you observed it? A. Yes.

X-Q. 59. But before that had you had any acquaintance with this process? A. No.

X-Q. 60. Are you personally familiar with the old hot process of building gem duck and innersoles? A. I have seen it carried out.

X-Q. 61. You were speaking of the action of the top coat in the patent in suit, of the precoat and base coat of the patent in suit, and his Honor asked you if there were some certain chemical reactions and you said no, you did not think so, but a swelling action of the solvent of the second coat on the material of the base coat. Is that right? A. Yes.

X-Q. 62. That swelling action you refer to is in effect the solvent action, isn't it? A. Yes.

X-Q. 63. You said that when you dissolve rubber in naphtha you get a dispersion of rubber in naphtha? A. Yes.

X-Q. 64. And that your latex is a dispersion of rubber in water? A. Yes.

X-Q. 65. Isn't it a fact that these two kinds of dispersion are quite different in kind? A. Yes, I think that is true.

X-Q. 66. I don't recall what your testimony was, but I think you said that you compared the relative tackiness, if I may say so of the cement, and let me call your attention to what I mean by cement, a solution of rubber in rubber solvent, and you said that a cement compared to a dispersion of rubber in water, like latex, got tacky quicker? A. No, I don't think so. I think what I said was that it maintained its tackiness over a longer range, that is, this dispersion in an organic solvent, continued its tackiness over a longer range than the dispersion in water of the latex type.

X-Q. 67. It goes through the tacky stage and takes longer to get over it—that is, it is tacky longer? A. That is correct.

X-Q. 68. Would you call 104 degrees Fahrenheit room temperature in this latitude? A. You have asked me a temperature which is pretty close to the edge. It is impossible to draw an exact line of what is room temperature and what is not room

temperature. I would say 104 degrees Fahrenheit was certainly near the upper limit of room temperature.

X-Q. 69. Anything above that would be certainly not room temperature? *A.* I should hardly think it would be.

X-Q. 70. I also believe, Doctor, that you testified that rubber in solvent, as described in the patent in suit, coacts in some way with the base coat? *A.* Yes, I think so.

X-Q. 71. Would a latex top coat coact in the same manner as the rubber solution? *A.* No, not exactly the same way, but the final result would be quite similar.

X-Q. 72. Now, then, you have testified as to certain experiments here on the latex, on the duck being drawn through and becoming cooler as time went on. Where did you take these measurements at 30 seconds, at the same place for each? *A.* No, because the—

X-Q. 73. You measured the zero seconds. *A.* With a stop watch we timed it and then, as I explained, this lead here was longer so I could reach over here and measure it approximately at the same place at approximately 15 seconds.

X-Q. 74. Where did you make the measurements at the other times specified, at the same place? *A.* In this instance after we had measured 15 seconds and in most instances 30 seconds, we didn't use that particular piece of duck for applying to the sole. We just held it in the air in that manner [indicating] for the rest of the time to elapse.

X-Q. 75. While you were applying the duck to the sole you were able to take your 15 and 30-second readings? *A.* We always got the 15; we didn't always get the 30.

X-Q. 76. Now, the first time that the latex got cooler, isn't that fact partly to be explained, at least, by the evaporation of the water? *A.* That is correct, in part.

X-Q. 77. If a rubber latex, Doctor, were applied to a precoated fabric such as you used here, with a rubber coating, would the water of the latex be absorbed? *A.* That would depend entirely

on the character of the precoat. If the precoat were somewhat porous the water of the latex would be absorbed.

X-Q. 78. It would run through into the fabric itself? *A.* Yes, sir.

X-Q. 79. It wouldn't be absorbed by rubber? *A.* No.

X-Q. 80. It might be absorbed by the cloth under the rubber? *A.* That is right.

X-Q. 81. And not by the rubber? *A.* That is right.

Mr. Gates. No more questions, if your Honor please.

Mr. Lyman. No more questions Doctor. I think the plaintiff rests, your Honor.

Mr. Gates. If your Honor please, before we go on with the witnesses I wonder if Mr. Lyman would be willing to state the composition of the various top coats that the plaintiff has been using. I am not after their particular method of mixing. All those things, of course, are more or less secret, but I understand the secrecy in most cases lies in the method of mixing, but no doubt they may have some specific proportions they find work better than others. But I am wondering if Mr. Lyman could let us know in general terms what these so-called latex gold top coats contain and roughly the proportions. I don't care about the exact proportions, but only about the—just in general whether a great deal of one thing and a very little of another.

Mr. Lyman. You want to know, for instance, whether there is any naphtha in this. I notice you have asked that.

Mr. Gates. I would like to know that.

Mr. Lyman. We can certainly find that out for you.

Mr. Gates. And roughly the proportion of naphtha.

Mr. Lyman. If any naphtha, and the proportion of naphtha. Make a note of that, Mr. Rood. Mr. Gates is very nice about this case because these formulae of ours here were specially developed formulae, and they are regarded as the secrets of our company. At the same time we are suing on a patent, and I know we are under some obligation to disclose to the defendant the

essentials as regards these materials. I will be very glad to see if I cannot get Mr. Gates the information that he requests without disclosing the whole formula.

The Court. I don't suppose that you would be limited to the formula of the patent, would you?

Mr. Lyman. No, your Honor.

The Court. Under that claim.

Mr. Lyman. No, no. The claim is broad, the claim is intentionally broad and not limited to the formula of the patent.

The Court. It would seem to me that the real issue here is whether the heat which you apply is necessary to your process or whether it is a mere subterfuge. If it is a subterfuge you don't escape it.

Mr. Gates. On that point, your Honor, I think we have two other points, but you hit on the point of the case.

The Court. What other point?

Mr. Gates. We have this other point on the construction of the patent, within the four corners. They are not limited to their specific formula, but whatever they have as top coat it must be top coat the liquid part of which is absolutely absorbed by the liquid part of the base coat. Then there is the limitation we say on that from the prior art. That doesn't mean it to be based on that formula but limited to some sort of a resin filler composition.

The Court. Isn't that just what happened in the patent? You say you don't follow the patent?

Mr. Gates. Yes, your Honor.

The Court. By using here a second coat, top coat, something is absorbed by the first coat.

Mr. Gates. No, we don't do that.

The Court. That is featured in the patent, of course.

Mr. Lyman. That is one of the incidents of the preferred formula, your Honor. If you use the preferred formula you get that action, but if you don't—

The Court. Of course, the effect I stated is the controlling

issue. If I should find heat was not necessary to your process that would do away with the others, with the other points.

Mr. Gates. That is a strictly legal question. On the fact question—

The Court. I am now considering that.

Mr. Gates. On the fact question it is whether our heat does something or does not, so that is a test to put in there. It may be important to show it is quite hard to get latex to stick cold if you just use latex. If you use some adhesive it will stick faster and quicker.

Mr. Lyman. What do you mean by "some adhesive"?

Mr. Gates. Take just for example here a very small amount of fish glue and it will stick closer and do it quicker—any of the glues they use, dextrin, casein will do the same thing. They are all, if your Honor will recall—latex coagulates very easily and it has been customary to use any one of the glues, such things as dextrin, casein and glue.

The Court. That sounds familiar.

Mr. Gates. They not only keep the stuff liquid but they help it to stick. If there is anything like that in this formula I think we ought to know it. If they are getting the sticking that they say they are getting, we would like to know it.

Mr. Lyman. What is the nature of the thing you want to find out?

Mr. Gates. I wonder if we couldn't do this: Would it be possible to confine the disclosure of the exact ingredients with the proportions—I am not interested in the exact proportions—but would it be possible to confine the disclosure of the materials to defendant's counsel and possibly the expert only, under an injunction of secrecy, to be used only in case the expert thinks that some of these ingredients have some effect on the adhesion of the latex?

Mr. Lyman. I may be able to do that, your Honor.

The Court. All right.

Mr. Gates. And don't give us the proportions because we don't want them—we prefer not to know it.

Defendants' Evidence.

ELMER A. ELLIS (Sworn).

Direct Examination.

Q. 1 (by Mr. Gates). You are the Elmer A. Ellis who is one of the defendants in this case? *A.* I am.

Q. 2. A good deal of your testimony, Mr. Ellis, has been stipulated, and I am going to assume that that is already in and question you somewhat further. You testified in this stipulation that you had got an idea of putting latex, as it came from the importer, right on to the gem duck, and that you began experimenting at Whitman in the plant of the Commonwealth Shoe & Leather.

The Court. About when was that?

Mr. Gates. That was in January, 1938, that he began the development. In March he had an experimental machine set up on the top floor of the Commonwealth Shoe & Leather, and in April he had it down on the first floor in commercial production.

Q. 3. Is that correct? *A.* That is correct.

Q. 4. That material you used out there in your work with precoated duck—that was used in the work at the Commonwealth Shoe & Leather in the early part of 1938—how was that made? *A.* That was made two pounds of the compound—do you want me to give you the formula?

Q. 5. No; we have got that in the record. *A.* 200 pounds of the compound and 100 gallons of naphtha.

Q. 6. Tell me what kind of rubber you used. *A.* I used smoked sheets.

Q. 7. What was done with it? *A.* It was milled for me at the Hood Rubber Company.

Q. 8. Do you know what they used in milling it? *A.* Why, they used a regular 2-roll, water cooled mill.

Q. 9. Do you know if they added any materials to it while milling it? *A.* None at all.

Q. 10. Did they use any peptizer? *A.* They used 1 per cent of peptonizer—one pound for every one hundred pounds of rubber.

Q. 11. That material is made and sold by the DuPont Company? *A.* Made by the DuPont Company.

Q. 12. Under the trade name RPA No. 1? *A.* RPA No. 1.

Q. 13. Was there any other material milled into the rubber by the Hood Company? *A.* Yes, there was 7 pounds of graphite.

Q. 14. Anything else? *A.* 7 pounds of graphite, 100 pounds of titanox to the 100 pounds of rubber, and then—200 pounds of rubber, 200 pounds of titanox, 7 pounds of graphite, 2 pounds of RPA No. 1.

Q. 15. What was the purpose of using titanox and the graphite? *A.* The graphite to color it gray.

Q. 16. And the titanox? *A.* The titanox to body it up and give more of a solvent content.

Q. 17. Did you use the titanox as a filler? *A.* I used the titanox as a filler.

Q. 18. Why did you use that particular filler? *A.* Well, because I had been using it in a gray paint I had made.

Q. 19. You just had it on hand? *A.* I had it on hand.

Q. 20. Just let me get this straight. This is your present commercial machine, Defendant's Exhibit A? *A.* It is.

Q. 21. Now will you describe just the differences there are, or were, between this machine and the first machine you had out there on the top floor of the Commonwealth Shoe & Leather at Whitman. *A.* This unit—

Q. 22. Wait a minute. When you say "this unit", you should describe it so that they can get it on the book. *A.* Well, I mean the return roll which is on the top of the machine.

Q. 23. Defendant's machine A? *A.* In the front of the machine.

The Court. Instead of on top?

The Witness. Instead of on top. And the stripper knife was here instead of here [indicating]; that is how you regulate the flow that is put on to the cloth.

Q. 24. This bar on top of the applying roll, under this top roll, is what you call the stripper bar? *A.* That is the stripper bar.

Q. 25. That is now on top? *A.* That is now on top.

Q. 26. It used to be in front? *A.* In front.

Q. 27. Did the machine at that time, as you used it then, have this water bottle? *A.* It did not.

Q. 28. Can you tell us when you adopted that water bottle as a part of the equipment? *A.* Oh, not until this year.

The Court. Was water used in the first machine, but no container at the side?

The Witness. Water had to be poured in. Each night the operator took her pot out to clean, and in the morning, before they put their latex into it, they filled it up with water.

The Court. That would last the day?

The Witness. Why, pretty nearly the day. It would go down some.

Q. 29. How many applying rolls did you have in your first machine? *A.* One.

Q. 30. How many applying rolls in the first machine up on the fifth floor? *A.* Two.

Q. 31. Now, at some later time did you change that machine in that respect? *A.* We changed that before I put it into operation. All I ever used the two-roll machine for was experimental work.

Q. 32. The first machine that got into operation had how many latex-applying rolls? *A.* One.

Q. 33. Now, in consequence of the change in the machine did you have to make any change in the top coat? *A.* I did.

Q. 34. What was that change? *A.* We had to body it up.

Q. 35. At first, when you were still using two rolls, what did you use? *A.* We used normally 60 per cent latex out of the drums, just as it is imported.

Q. 36. Just as it is imported? *A.* Yes, sir.

Q. 37. When you went to the one-roll machine, what change

did you make? *A.* We put in about 1 per cent of a bodying agent.

Q. 38. What did you use? Any pronunciation will go, because we all use different ones. Gum tragacanth? *A.* Gum tragacanth.

Q. 39. What is the effect of the addition of gum tragacanth? *A.* It bodies it up.

Q. 40. What do you mean by that? *A.* I mean it makes it more viscous so that it will be thicker.

Q. 41. Did you perform any experiments to determine how much of this bodying agent to use? *A.* Why, in a crude way.

Q. 42. What did you do? *A.* I put different batches of it on to the roll of the machine until I got one that would not run off, and then I took the viscosity of it.

Q. 43. Until you got one that would not run what? *A.* Run off the cement roll.

Q. 44. What would be the effect of its running off the cement roll? *A.* It would leave a blank space over that spot, a space for more than one innersole.

Q. 45. Then when you got one that was thick enough by cut and try methods, not to run off, you took its viscosity? *A.* I did.

Q. 46. How did you determine that? *A.* We used a bulb Pipette viscometer, and the timing there was 1 minute 40 seconds.

Q. 47. That contraption measures relative viscosity, does it not? *A.* It does.

Q. 48. What effect, either on the latex or on the rubber film that is deposited from the latex, other than the bodying or thickening, does that gum tragacanth have? *A.* I don't think it has any.

Q. 49. Does it have any adhesive in it? *A.* I don't think it has.

Q. 50. There came a time when you put in one of your machines on the first floor of the Commonwealth Shoe & Leather? *A.* Yes, sir.

Q. 51. Were there any other top coating machines then in use? *A.* There were. There was one. There were two there when we went down, and we took the place of one.

Q. 52. Do you know of your own knowledge what those machines were? *A.* It was an H-B Products machine.

Q. 53. Did you observe your own machine, the Magic Company's machine, in operation? *A.* I did.

Q. 54. Can you say about how often? *A.* Oh, every day. We were in there every day for two weeks.

Q. 55. Did you observe the operation of the H-B machine? *A.* Only slightly. We watched it.

Q. 56. Were you able to make a comparison between the work of the two machines? *A.* Yes. And the operator said the duck stuck better from ours—

Mr. Lyman. Just a moment. I object to what the operator said. The question was, Did you observe the operations of the machines?

The Witness. I did.

Mr. Lyman. The witness undertook to add something in there that he had not any right to do.

[Adjourned to 10 A.M., Wednesday, October 4, 1939.]

FEDERAL BUILDING, BOSTON,
October 4, 1939, 10 A.M.

MARGARET STODDARD (Sworn).

Direct Examination.

Q. 1 (by Mr. Gates). Your name is Margaret Stoddard? *A.* Yes, sir.

Q. 2. You work for the Commonwealth Shoe & Leather Company? *A.* Yes, sir.

Q. 3. Where do you live, Miss Stoddard? *A.* Main Street, North Hanover.

The Court. Where is this plant located?

Mr. Gates. Whitman, Massachusetts.

Q. 4. The plant you work at is where? *A.* Commonwealth Shoe & Leather Company.

Q. 5. What town? *A.* Whitman, Massachusetts.

Q. 6. What do you do there? *A.* I cut and form canvas.

Q. 7. What is done with the canvas that you cut and form? *A.* Put on the innersoles.

Q. 8. Do you recognize that machine that is on the bench in front of you? *A.* Yes, sir, I do.

Q. 9. Defendant's Exhibit A. Do you operate one of those machines now? *A.* Yes, sir, I do.

Q. 10. Do you recall operating or helping to operate a machine like that on the fifth floor of the Commonwealth Shoe & Leather? *A.* Yes, sir, I do.

Q. 11. Now will you please tell how that machine was operated on the fifth floor of the Commonwealth Shoe & Leather? *A.* It was operated by heat.

Q. 12. How did it feel to the touch? *A.* Warm.

Q. 13. How did the cloth feel to the touch? *A.* Warm.

Q. 14. How close to the machine did you stand? *A.* Well, I stand close enough to reach it.

Q. 15. About how long a strip of canvas do you apply? *A.* Just the length of the sole.

Q. 16. You are close enough to the machine to do that? *A.* Yes.

Q. 17. How does the canvas feel to the touch? *A.* Warm.

Q. 18. Now, you said that the machine as used on the fifth floor was warm to the touch and was heated? *A.* Yes, sir.

Q. 19. Was it ever operated in any other way? *A.* No, sir.

Q. 20. Now, at some time or another a machine like that was brought down on the first floor, was it not? *A.* Yes, sir.

Q. 21. At the Commonwealth Shoe & Leather? *A.* Yes, sir.

Q. 22. Did you work on that machine there? *A.* Yes, sir.

Q. 23. When it first came down? *A.* Yes, sir.

Q. 24. How was that machine operated? *A.* Warm.

Q. 25. How did the cloth feel to the touch? *A.* Warm.

Q. 26. Did you operate the machine without heat? *A.* No, sir.

Q. 27. What is the effect of the heat on the cement? Do you know? *A.* Why, it makes the canvas stick better and easier to form.

Q. 28. You do the forming as well as the cutting? *A.* Yes, sir.

Q. 29. Now will you tell the court, please, how you fill the water jacket, what your procedure is? *A.* Well, I have a small bottle, and I have a can, and I put the water into the can, and I warm the water up and then I pour it into the bottom of the tray.

Q. 30. What time of day do you fill the machine? *A.* Why, if I am through at noon I fill it at noon before I go home, and if I get through at night I fill it before I go home at night so that it is always warm.

Q. 31. It is always warm when you come to work? *A.* Yes, sir.

Mr. Lyman. What are you talking about, please?

Mr. Gates. Filling the water jacket.

The Court. That is the old type of machine you are talking about, isn't it?

Mr. Gates. Yes, your Honor.

Q. 32. Miss Stoddard, is there one of these water bottles on your machine? *A.* No, sir.

Q. 33. Not today? *A.* No, sir.

Q. 34. There was not at that time? *A.* No, sir.

Q. 35. Would it be practical to put in fresh water in the water jacket at eleven o'clock in the morning? *A.* No. No piece hand starting at 11 o'clock in the morning would put water in the tray.

Q. 36. How long would it take to put water in the tray? *A.* You have to clean your whole tray out, dump it all out, as if I was going home at night, warm your water, and it would take about half an hour.

Q. 37. Do you know Mr. Perkins, of the Boston Blacking Company? *A.* Yes, sir.

Q. 38. Mr. Perkins testified yesterday that you told him that you never saw any difference in the way the process worked whether heat was on or not. *A.* Why should I tell him that? I never operated without heat.

Q. 39. Did you tell him that? *A.* No, I didn't.

Q. 40. Mr. Perkins also said that at one time he asked you if the heat was on, and it was at eleven o'clock in the morning, and you stated you had just put in some more water and it had not warmed up yet, is that correct? *A.* No, it is not.

Q. 41. Did you ever tell him that? *A.* No, sir.

Mr. Gates. No more questions, Miss Stoddard.

Cross Examination.

X-Q. 42 (by Mr. Lyman). Do you keep the heat unit on at night? *A.* Yes, sir.

X-Q. 43. All the time, night and day? *A.* The switch is on, yes.

X-Q. 44. The heating unit is on all night? *A.* Yes, sir.

X-Q. 45. You put in warm water when you leave at night? *A.* Yes, sir.

X-Q. 46. What is the idea of putting in warm water when you leave at night? *A.* I always do.

X-Q. 47. What is the sense of it? *A.* Because the heat goes off at night.

X-Q. 48. I thought you said— *A.* I don't take it off, the power.

X-Q. 49. I thought you said the heat was on at night. *A.* I leave it on.

X-Q. 50. The light, the current goes off at night in the factory? *A.* It comes on at five o'clock in the morning.

X-Q. 51. You put in hot water when you leave at night so it would be warm in the morning? *A.* Yes.

X-Q. 52. Warm water in the night so it would be warm in the morning? *A.* Yes, sir.

Mr. Lyman. That is all.

Mr. Gates. No more questions.

LAWRENCE J. THEBEAU (Sworn).

Direct Examination.

Q. 1 (by Mr. Gates). What is your full name? *A.* Lawrence J. Thebeau.

Q. 2. Where do you live? *A.* I live in Farmingdale, Maine.

Q. 3. Where do you work, Mr. Thebeau? *A.* I work at the Commonwealth Shoe and Leather Company, Gardiner, Maine.

Q. 4. What is your position there? *A.* I am what is known as floor man in the shoe shop, in the sole leather.

Q. 5. Is reinforcing insoles done in the sole leather room? *A.* Done down in the sole leather room, in the insole department.

Q. 6. What are your duties around the plant? What do you do? *A.* I have a job, a steady job; I score and stamp insoles and flex insoles.

Q. 7. Can you identify that [handing insole to witness]? *A.* Yes, sir.

Q. 8. What is this flexing operation you speak about? *A.* This flexing operation is to slash through the canvas into the leather to give the insole flexibility.

Q. 9. Show us on that. *A.* The knife goes into the canvas, through the canvas into the leather making the innersole flexible.

Q. 10. Do you have any other duties except to flex the innersoles? *A.* Yes, I score and stamp.

Q. 11. Do you have any other duties in the plant? *A.* Yes, sir. When anyone along the line, insole department line, is out sick or cannot be there for work I fill in for them.

Q. 12. Have you had any experience with any other operations in the shoe plant beyond the insole room or sole leather room? *A.* I have done everything in the insole line.

Q. 13. Have you ever done any welting or lasting? *A.* No, I have never done any welting or lasting. I have worked in the lasting room as far as assembling.

Q. 14. You have had some experience in actually using duck and felt, having to do with innersoles? *A.* I have worked on it.

Q. 15. How long have you been familiar with the process? *A.* About nine years, I should say.

Q. 16. What machines and materials are in use at the Commonwealth plant now? *A.* Magic Tape.

Q. 17. Are they like the machine that is on the stand in front of you, Defendant's Exhibit A, substantially? *A.* Yes, sir.

Q. 18. By the way, do you have the water bottle at your plant? *A.* We do.

Q. 19. Do you recall when it was put in? *A.* I can't recall the exact date.

Q. 20. Now will you please describe how that machine is operated? Begin in the morning and tell just what is done. *A.* In the morning the power is on at a quarter past six,—that is, the current is turned on in the control room before we get in the plant. The machine is left on at night when we go home, and with this heating unit in here the water has time to heat before we start operating the machine. Some mornings, if the room is below normal temperature, we heat the water in this jug.

Q. 21. Do you ever heat the latex too? *A.* What do you mean?

Q. 22. Did you ever heat the cement in this jug before you put it in the machine? *A.* Yes, sir, I do.

Q. 23. Do your duties call on you to supervise the reinforcing of insoles at all? *A.* They do.

Q. 24. What do you do in the morning when you get to work? What do you do to this machine? *A.* I get this machine ready for the girls to do work on. I clean the rolls, and I see that the water is hot, and that the canvas is all ready to be put into the rolls.

Q. 25. How does the machine feel to the touch? *A.* Very warm.

Q. 26. Now, do you make any adjustments on the machine? *A.* I do.

Q. 27. The one you have now? How many machines do you have, by the way? *A.* Do you mean the machines of this company?

Q. 28. Machines, yes, of the Magic Company. How many do you have now like that? *A.* We have two.

Q. 29. What adjustments do you make in those machines? *A.* Well, sometimes the operator complains that the cement on the gem duck does not bite or stick.

Q. 30. What do you mean by that, does not bite or stick? Can you illustrate?

The Court. How about using the end of this roll?

The Witness. That will be all right.

Q. 31. We won't bother to thread this. It comes through the machine some way, in this way. *A.* It operates in this fashion in the machine [illustrating].

Q. 32. Can you turn that the other way around to show the judge just what you mean by the operator complaining that it does not grab or stick? *A.* When the operator lays the innersole on the canvas in this manner and picks up the innersole, if it does not bite it does not pick the canvas up, and it does not give them a chance to get their fingers under the canvas in order to pick it up and cut it off, and the toe does not stick so that they can put their scissors on it.

Q. 33. The toe has to stick to get the scissors under? *A.* Yes.

Q. 34. Is there any importance in being able to put their fingers under there and press? *A.* Well, pressure helps.

Q. 35. When the operators complain that they are not getting a quick bite, as you have just described, what do you do? *A.* Turn up the heat.

Q. 36. When the operators complain that the bite or grab is not fast enough, what do you do? *A.* I turn up the heat; that is, give more heat.

The Court. How do you do that?

The Witness. By adjusting the thermostat control in the back of the machine, in the small box.

Q. 37. What has your experience been as to the effect of heat on this latex cement? *A.* I find that the heat gives much better

bite and grab and stick, and we have found that we had very much less trouble with the heated cement.

Q. 38. Now, you say you found that you had less trouble with the heated cement? *A.* Yes, sir.

Q. 39. The heat gives you a better and quicker grab. Does it have any other advantages? *A.* It helps the person forming in the innersole. This is a former [indicating].

Mr. Gates. The witness picks up the forming tool with Defendant's Exhibit A.

The Witness. When the operator lays the canvas on and cuts off the canvas at the end of the toe, they turn the innersole over and form it in, do this forming in process. They go over it with the former.

Q. 40. That operation is made easier with heat, you say? *A.* We find that it sticks better. The operator only has to go over the canvas once, whereas we found when it was cold that they had to go over it more than once.

Q. 41. Are there any other advantages in heating the cement, to your knowledge, beyond this forming operation? *A.* The heating in the canvas we find sticks better to the rib as well as to the innersoles.

Q. 42. Where is that sticking of the canvas to the rib secured? *A.* Well, it is put through the trimming machine. The trimming machine has two rolls and a knife. There is pressure on the rolls, squeezing the canvas to the leather, and the knife trims around the edge.

Q. 43. Is there any advantage in using hot cement in that machine? *A.* Well, I don't know. It seems to form in better. The shape of the machine, the roll, seems to go into the canvas better. That is all I can say about that.

Q. 44. Did you have any other troubles with the cold cement? *A.* We did.

Q. 45. What troubles were they? *A.* In the lasting room the canvas would pull away from the rib.

Q. 46. Why is that? *A.* Well, the side lasters and the welters—

Q. 47. Can you explain to the judge? *A.* The side lasters and the welters drive staples and nails in this direction there, and it has a tendency to push the canvas away from the rib, and the canvas is there really to reinforce the rib.

Q. 48. What experience did you have in the lasting room, to your knowledge, when they were using cold cement? *A.* We had a lot of innersoles come back with the canvas pulled away from the rib.

Q. 49. With hot cement what has been your experience? *A.* We have not had any come back.

Q. 50. In this flexing operation that you have described, how does that flexing operation work on a cold cement? *A.* On a cold cement, the knife going through the canvas, we found that the canvas in here would lift away from the leather.

Q. 51. What has been your experience in that respect with the hot cement? *A.* We have not had any.

Mr. Gates. If your Honor please, I will introduce this in evidence as Defendant's Exhibit B.

[Flexed insole is marked as "Defendant's Exhibit B".]

Mr. Gates. Mr. Lyman, this is the only one I have; I will get you one.

Q. 52. Have there been any changes at all in the Magic machine since the Commonwealth Shoe & Leather first got it? *A.* There have.

Q. 53. What changes were there? Do you know? *A.* This jug has been added, the water jug, and we have had higher heating units.

Q. 54. Do you happen to know the size of the heating unit that is in there now? *A.* I do not.

Q. 55. You say the machine has been changed by adding higher heating units. *A.* We get more heat out of the units that had been put in.

Q. 56. About how many times did they change the heating units? *A.* Oh, I recall three.

Q. 57. Do you know why they made that change? *A.* I do.

Mr. Lyman. Just a moment. Why don't you ask whoever made the change why he made it?

Mr. Gates. I am asking the witness if he knows why the change was made, of his own knowledge.

Q. 58. Do you know? *A.* I asked for it.

Q. 59. You asked for it? *A.* I did.

Q. 60. Why did you ask for more heat? *A.* Because I found that more heat made the cement stick better and we had less trouble with it.

Q. 61. Now, in the operation of the machine, do you inspect the work during the day at all? *A.* I do.

Q. 62. What do you do? *A.* I go by the machine from where I stand—I go to the slashing machine, which is at the lower end of the room, and in going there I go by this machine, and when I go by I put my hand on the canvas where the girl cuts off.

Q. 63. How does that canvas feel to the touch? *A.* It feels warm.

Q. 64. How long have you been operating Magic Tape machines of that general construction? *A.* About a year I can remember of.

Q. 65. Do you recall the first machine that came in? *A.* I do.

Q. 66. Were you familiar with its operation? *A.* I was.

Q. 67. How did that machine feel to the touch? *A.* It felt warm.

Q. 68. How did the canvas feel to the touch? *A.* It felt warm.

Q. 69. Now, have you had any experience with a cold process? *A.* We have.

Q. 70. What process was that? *A.* It was the H-B process, a machine similar to that one.

Mr. Lyman. To what one?

The Witness. That one right there.

Q. 71. This one [indicating]? *A.* Similar to that.

Mr Gates. The witness points to Plaintiff's Exhibit 9.

Q. 72. When you have been referring to the cold process during your previous answers, to what process have you been re-

ferring? *A.* Well, it is too—I don't know the name of the company, but it is the—

Q. 73. It was a process used in this machine, was it not? *A.* Yes, it was a process done on that machine.

Mr. Lyman. You don't mean on that machine, do you?

The Witness. Not that particular one, no.

Mr. Gates. One like it. The witness points to Plaintiff's Exhibit 9.

Q. 74. Just describe your experience with that machine in the cutting operation. *A.* We found that in the cutting operation the operators had to form—they had to go over the innersole twice with the former.

Q. 75. Was there any disadvantage in the making before you got to the forming? *A.* They found a disadvantage in the cutting, that the canvas slipped off the innersole when they turned it over.

Q. 76. Did you have any other troubles with that process? *A.* Well, we had innersoles come back from the lasting room with the canvas pulled away from the rib.

Q. 77. What was your experience in flexing soles with that process? *A.* We found a great many of the inner soles where the canvas would pull away from the leather.

Q. 78. To your knowledge have any of the Magic Tape machines ever been run without heat? *A.* No, sir. More heat, if anything. We have added more heat, if anything.

Mr. Gates. No more questions. Your witness, Mr. Lyman.

Cross Examination.

X-Q. 79 (by Mr. Lyman). Are you in the regular pay of the Magic Tape Company? *A.* No, sir.

X-Q. 80. You have a job of cleaning the Magic Tape machines, do you, at the factory? *A.* I do.

X-Q. 81. You get paid for that by the Magic Tape Company? *A.* I get paid by the salesman.

X-Q. 82. By the salesman of the Magic Tape Company? *A.* Yes, sir.

X-Q. 83. You get paid so much per month by the Magic Tape Company, by its salesman, for cleaning the machines? A. Yes.

X-Q. 84. Yet you say you are not in the regular employ of the Magic Tape Company? A. I mean I haven't any weekly wages

X-Q. 85. You get monthly wages? A. Yes, sir.

X-Q. 86. Just what is your job called? A. It is called—I am what you might call a floor man.

X-Q. 87. You are a foreman? A. Floor man.

X-Q. 88. What does that mean, general utility man to do anything you are asked to do? A. Yes.

X-Q. 89. And most of the time you are doing this stamping and scoring and flexing of insoles,—right? A. Right.

X-Q. 90. And then you say that occasionally you had occasion to operate these machines in the insole reinforcing? A. Yes.

X-Q. 91. When one of the regular operators was out and they wanted somebody to fill in? A. Yes, sir.

X-Q. 92. Who are the regular operators? A. Who are the regular operators?

X-Q. 93. Yes. A. There are two regular operators in the factory.

X-Q. 94. Who are they? A. One is Emily Laliberte and the other one is Pearl Lambert.

X-Q. 95. When one of those girls is out they take you away from the flexing and scoring and stamping, which is your regular job, and put you to work to run the machine, to spell them, because the girls are out? A. Prior to the time they had steady—

X-Q. 96. Was the answer to that question yes? A. Yes, sir.

X-Q. 97. How many times have you actually run that machine in commercial operation? A. Hundreds of times.

X-Q. 98. Of course, the girls have been out hundreds of times? A. No. Before that one girl on one machine, she didn't have that job, and there were several operators in there, coming and going, in the factory.

X-Q. 99. You have worked on that machine hundreds of days, have you? A. Not exactly hundreds of days.

X-Q. 100. Well how many days? *A.* I would not know for sure.

X-Q. 101. What is the last time you actually reinforced insoles on that machine? *A.* About a month ago.

X-Q. 102. For how long? *A.* For a day.

X-Q. 103. What do you know about the lasting room? Do you have anthing to do with the lasting room? *A.* I do.

X-Q. 104. What? *A.* I tack insoles in the lasting room.

X-Q. 105. You are not in any sense a foreman? *A.* No, sir.

X-Q. 106. Complaints about what happen there don't come to you? *A.* I get the cripples.

X-Q. 107. You do what? *A.* I have to fix the crippies, repair and make over.

X-Q. 108. Now this machine, you say that under the H. B. process you had trouble with cripples? A. We did.

X-Q. 109. By the way, where did you operate the H. B. process? *A.* In Gardner.

X-Q. 110. At this factory? *A.* At this factory.

X-Q. 111. Before the Magic Tape process was put in? *A.* Yes, sir.

X-Q. 112. You had some cripples with the H. B. process? *A.* We did.

X-Q. 113. Did you ever have any trouble with the Magic Tape process? *A.* We haven't.

X-Q. 114. None at all? *A.* I will take that back.

X-Q. 115. You had better be careful what you say. You have had some trouble with the Magic Tape process? *A.* Very little

X-Q. 116. From the beginning? *A.* From the beginning.

X-Q. 117. It worked perfectly all right from the beginning? *A.* It has.

X-Q. 118. And yet you say that the operators would complain to you about working on this thing, and every time they complained you turned up the heat, and they would continue to complain, and you turned it up more? *A.* Yes, sir.

X-Q. 119. And they would continue to complain and you would turn it up some more? A. Yes.

X-Q. 120. And they then continued to complain and you would still turn it up more? A. Yes, sir.

X-Q. 121. Have you reached the limit of turning it up now? A. When I reached the limit turning it up I put on another heat unit.

X-Q. 122. Have you reached the limit of turning it up with that heating unit now? A. I have not.

X-Q. 123. How do you know this device had that effect? A. The device has—there is a thermostatic control on this side.

X-Q. 124. What does it look like? A. A screw on the back of the thermostat.

X-Q. 125. Is there any scale to indicate what the heat is going to be? A. None that I know of.

X-Q. 126. You just simply guess and turn it up? A. I go out and turn it up.

X-Q. 127. Which way do you turn it? A. Turn it to your left like that, with my hand.

X-Q. 128. Is that clockwise, or opposite? A. Turn it to the left this way [indicating].

X-Q. 129. Counterclockwise, you get more heat? A. Yes, sir.

X-Q. 130. That thermostat is located where? Where is it located, in the water? A. It is in the water, yes, sir.

X-Q. 131. The theory of that is that when the water gets so hot that such a degree of heat will turn off the heat? A. Automatically it will shut off.

X-Q. 132. The thermostat is in the water? A. Yes, the thermostat is in the water, yes, sir.

X-Q. 133. How many insoles, do you treat with one gallon of Magic Tape latex? A. I never exactly counted them, but I know you can do over thirty dozen pair.

X-Q. 134. Thirty dozen pair with one gallon? A. I know you can do that much. I never counted them. I don't know exactly how many you can do.

X-Q. 135. You spoke about three changes that had taken place in the heating unit, the size of it? A. Yes, sir.

X-Q. 136. What was the date when the first change was made in it? A. I don't know the date.

X-Q. 137. Can you guess? Was it this year or last year? A. It was in the spring once.

X-Q. 138. The spring of this year? A. Yes.

X-Q. 139. The spring of 1939? A. Yes.

X-Q. 140. When did the second change come, an increase in the size of the heating unit, in the spring of 1939? A. The second change came a little later.

X-Q. 141. That would be when? A. I don't remember the date.

X-Q. 142. Was it also in the spring of 1939? A. One change was made in 1938.

X-Q. 143. All right. You are changing your testimony. You say one change was made last year, in 1938? A. Yes.

X-Q. 144. What part of the year 1938? A. It was along in the spring.

X-Q. 145. In the spring of 1938? A. Some time.

X-Q. 146. When did this machine get into your place up there? A. Some time—I think around June—I am not sure.

X-Q. 147. In June, 1938? A. Yes.

X-Q. 148. And this change was made in the spring of 1938, that is your testimony? A. What is that?

X-Q. 149. Your testimony is that the machine was put in your place in June, 1938, and the first change in the heating unit was in the spring of 1938? A. Right following the machine, yes, sir.

X-Q. 150. Right following the machine? A. Right after the machine was put in.

X-Q. 151. The machine wasn't put in, you say, until June? A. I don't know for sure.

X-Q. 152. It was the summer, was it? All right. Your present testimony is that there was a change made in the heating unit right immediately after the machine was put in? A. Yes, sir.

X-Q. 153. Before it had been operated at all? *A.* No, it had been operated.

X-Q. 154. That first change is No. 1. When is change No. 2? *A.* Change No. 2 was put in at my request a little later.

X-Q. 155. Strike it out. Just answer my question. I didn't ask you anything about your request. When was it put in, is the question. *A.* Put in later. I don't know the exact date.

X-Q. 156. In 1938 or 1939? *A.* 1938.

X-Q. 157. When was the last change made? *A.* In 1939.

X-Q. 158. What part of 1939? That is this year. *A.* I don't remember that.

X-Q. 159. You cannot remember at all? *A.* I cannot remember dates.

X-Q. 160. Was it within two or three months? *A.* What do you mean?

X-Q. 161. When was this last change in the heating unit made? *A.* The last change was made in the heating unit when we put this new machine in with this in it.

X-Q. 162. There was a new machine put in there then? *A.* Yes.

X-Q. 163. When was that? *A.* That was the last time that came in.

X-Q. 164. When was it put in? *A.* That is what I don't know—I cannot remember the date.

X-Q. 165. Was it put in within two or three months? *A.* I don't know—months—you mean?

X-Q. 166. From now, this summer? *A.* Yes, I should say so.

X-Q. 167. All right. You say that there were two changes made in the old machine, did I understand you to say, in the heating unit? *A.* Yes.

X-Q. 168. One almost immediately after it was put in and another one some time in 1938? *A.* That is right.

X-Q. 169. And then the third change which you have told us about is their putting in a new machine? *A.* Yes.

X-Q. 170. How do you know the heat unit in this machine is

any different than the heating unit in the old machine? *A.* Because I got more heat out of it.

X-Q. 171. How did you know you got more heat? *A.* I put my hand on the machine.

X-Q. 172. It is a matter of touch, is it? *A.* Yes.

X-Q. 173. That is your only way of estimating the heating effect, is it? *A.* Yes, sir.

X-Q. 174. Is it your duty to inspect work done on these machines? *A.* Yes, sir.

X-Q. 175. Part of your regular work is to go around and inspect work being done on these machines? *A.* Yes, sir.

X-Q. 176. For which you are paid by the Commonwealth Shoe Company? *A.* Yes, sir.

X-Q. 177. You are supposed occasionally to depart from your job of scoring and stamping and flexing insoles and go around and see these machines and see whether they are working properly? *A.* I see this done when I go by the machines to my other work.

X-Q. 178. I asked if it was part of your job. *A.* Yes, sir.

X-Q. 179. For which you are paid by the Commonwealth Shoe Company? *A.* Yes, sir.

X-Q. 180. Who told you to inspect the work on these machines? *A.* The foreman.

X-Q. 181. What is his name? *A.* Alton White.

X-Q. 182. Is it your job to keep in touch with the operations of this machine? *A.* Yes, sir.

X-Q. 183. That is the thing you are being paid for by the Magic Tape Company? *A.* Yes, sir.

Mr. Lyman. That is all.

Redirect Examination.

Q. 184 (by Mr. Gates). I believe you testified on your cross examination, Mr. Thebeau, that you at one time used more than one heating unit? *A.* I did.

Q. 185. Is that correct? *A.* I did.

Q. 186. Will you describe just what you did? A. We were not getting enough heat so I put another cord onto a heating unit that was left at the factory, the salesman left there, and put it on the top of this tray here, in this manner [illustrating], and put this cover on top of the heating unit so it would heat directly to the cement.

Q. 187. What was the effect of that extra heat? A. We found it stuck very much better.

Mr. Gates. No more questions.

JOSEPH MCDONALD (Sworn).

Direct Examination.

Q. 1 (by Mr. Gates). What is your full name, Mr. McDonald? A. Joseph McDonald.

Q. 2. Where do you live? A. 9 Falmouth Avenue, Brockton.

Q. 3. Just at present for whom are you working? A. Mullen Brothers.

Q. 4. What do they do? A. Leather repairers.

Q. 5. Did you at one time work for the Diamond Shoe Company? A. Yes, sir.

Q. 6. Where is their plant? A. Spark Street, Montello, Massachusetts.

Q. 7. What were your duties when you worked for them? A. Working on a cloth cutting job.

Q. 8. Do you recognize this machine that is on the stand in front of you, marked "Defendant's Exhibit A"? A. Yes, sir.

Q. 9. Did you ever operate a machine like that? A. Yes, sir.

Q. 10. What is this cloth cutting job you refer to? A. Operating that machine on the cloth.

Q. 11. Could you illustrate what you mean by that? I will hold the end. A. They pass through here [indicating]. I would draw it through and put it on the insole and give it to the fellow next to me that worked with me.

Q. 12. The fellow next to you did what? A. He formed it in.

Q. 13. You worked in a team? A. Yes, sir.

Q. 14. You did the cutting? *A.* Yes, sir.

Q. 15. And somebody else besides you did the forming? *A.* Yes, sir.

Q. 16. Was there any other member of the team? *A.* Yes, sir.

Q. 17. Who was that? *A.* His name?

Q. 18. No. What did he do? *A.* He was the trimmer.

Q. 19. How long did you operate the Magic Tape machine, if you know? *A.* I operated when they brought it in there. That was last summer, I think.

Q. 20. The summer of this year, or was it 1938? *A.* '38.

[The testimony is read.]

Q. 21. How long did you operate it? *A.* Until May of this year.

Q. 22. And when that first machine came in, can you describe how it was operated, beginning with the first thing that was done in the morning and carrying through? *A.* The first thing in the morning I used to put hot water in it.

Q. 23. Where did you get the hot water? *A.* At a sink there with a hot steam pipe—I used to make my own hot water. I put that in there, and I also heated the cement before I put it into the machine.

Q. 24. Did you do that every day? *A.* Yes, sir.

Q. 25. Now then, what did you do after the cement and water heated up? *A.* I waited until everything was all set to work, until it was hot enough to work, and then I went to work.

Q. 26. You waited until it was hot enough to work? *A.* Yes.

Q. 27. How did you tell that? *A.* I could tell that by feeling of the cloth and the way it stuck to the innersole.

Q. 28. When you got a quick enough bite you started in? *A.* Yes.

Q. 29. Were any changes made in the machine after it was brought to the factory of the Diamond Shoe Company? *A.* Yes, sir, there was.

Q. 30. Do you know what they were? *A.* Yes, sir.

Q. 31. What were they? *A.* Change in the heating unit.

Q. 32. What kind of a change? *A.* Each time they changed it they increased the heat.

Q. 33. How do you know that? *A.* You could tell by the way it operated and by the feel of it.

Q. 34. Do you know why they made those changes? *A.* Yes, sir.

Q. 35. Why? *A.* I requested them.

Q. 36. What was your reason for that? *A.* Because it didn't work good enough for me.

Q. 37. How fast do you operate? *A.* How fast?

Q. 38. Yes. *A.* Well, I have done 440 dozens a day on this cloth. I have done more on the other cloth.

Q. 39. You have done 440 on this cloth? *A.* Yes, sir.

Q. 40. After these changes were made what experience did you have, after the larger heating unit was added? *A.* What experience?

Q. 41. Yes. *A.* I don't know what you mean.

Q. 42. How did the machine work? *A.* It worked better, much better.

Q. 43. Have you had any experience with the cold process? *A.* Yes, sir.

Q. 44. Will you describe what that experience was and when it was? *A.* Well, they brought in a machine and we went to work on it. I went to work on it and couldn't seem to get results with it, so previous to that I had been working on hot cloth.

Q. 45. What do you mean by hot cloth? *A.* Hot duck cloth, which was run over a steaming machine.

Q. 46. The old hot process? *A.* Yes, sir. I rigged up an idea of my own. I got good result so I laid out this wooden trough, put it over the steamer, and I brought that particular cloth over that and had much better results.

Q. 47. You drew what cloth over the steamer? *A.* The cold cloth.

Q. 48. You got much better results? *A.* Yes, sir.

Q. 49. In what way? Can you describe how the results were better? *A.* It stuck better, worked faster.

Q. 50. You work at piece work? *A.* Yes, sir.

Q. 51. And your interest was to work fast? *A.* Yes, sir.

Q. 52. Do you recall what that cold process was that you had to change by the addition of heat? *A.* Yes, sir.

Q. 53. What was it? *A.* H. B. stuff.

Mr. Gates. Your witness, Mr. Lyman.

Cross Examination.

X-Q. 54 (by Mr. Lyman). When was it you had your experience with the H. B. machine, Mr. McDonald? *A.* You mean the date of the year?

X-Q. 55. Yes, in general. *A.* I don't know, to be exact—last year.

X-Q. 56. Last year some time? *A.* Yes, sir.

X-Q. 57. By the way, you were working at the Diamond Shoe Company when all this happened, were you? *A.* Yes, sir.

X-Q. 58. How long had you worked at the Diamond Shoe Company? *A.* About 15 years or more.

X-Q. 59. During all that time on this reinforcing of innersoles? *A.* No, sir.

X-Q. 60. How long were you working on the reinforcing of insoles? *A.* About between 10 and 12 years. I don't know the exact date.

X-Q. 61. The last ten or twelve years? *A.* Yes, sir.

X-Q. 62. You have left the shoe factory now, have you? *A.* Yes, sir.

X-Q. 63. When did you leave the Diamond Shoe Company? *A.* The first day of May or the last day of the month previous to May, April.

X-Q. 64. Of this year? *A.* Yes, sir.

X-Q. 65. Up to the time when you used the H. B. process what was the method you were using in the Diamond factory for reinforcing insoles? *A.* It was the Steadfast rubber product.

X-Q. 66. That means you had a coated strip of canvas that came along and you put it on a hot surface and heated it up and got it in shape to unite to the insole? A. You said previous to my leaving?

X-Q. 67. Previous to getting the H. B. process? A. Yes, sir.

X-Q. 68. What we have known as the old hot process? A. Yes, sir.

X-Q. 69. Now, when did you try out this H-B process? A. When it was brought in to us. I don't know as I told you the date. When they brought it in for us to try it.

X-Q. 70. That is when you tried it out? A. Yes, sir.

X-Q. 71. When was that; a year or two ago? A. Yes, sir.

X-Q. 72. It was within that time, was it? A. It was last year.

X-Q. 73. 1938? A. Yes, sir.

X-Q. 74. So that you tried that out before you tried the Magic Tape process out? A. Yes, sir.

X-Q. 75. How long did you have that H-B process in use there? A. About three months.

X-Q. 76. What was the piece rate you got when you were using the H-B process? A. I think it was 10½ cents per case for the three operations.

X-Q. 77. What was the piece rate when you were using the Magic Tape process? A. The same thing.

X-Q. 78. No increase? A. No, sir.

X-Q. 79. What was the piece rate that you were paid when you were using the old hot process that you have spoken about? A. The same thing.

X-Q. 80. What was the material that you used in carrying on this H-B process? A. It was a cloth that they furnished, and their cement, and their machine.

X-Q. 81. There was no heat in that process at all? A. No, sir.

X-Q. 82. When was it that you got this process of the defendant, Magic Tape Company, into your plant at the Diamond Shoe Company? A. It was last summer sometime.

X-Q. 83. The summer of 1938, you mean, Mr. McDonald? *A.* Yes, sir.

X-Q. 84. The latter part of the summer? *A.* Well, I imagine it was around August.

X-Q. 85. You don't know exactly? *A.* No, sir.

X-Q. 86. Now, the advantage that you find in this heat is that it makes it a more speedy operation? Is that it? *A.* That is one of the advantages.

X-Q. 87. Haven't you got perfectly good bonds of shoes, only slower, without heat? *A.* Without heat?

X-Q. 88. Yes. *A.* It was not as satisfactory as with the heat.

X-Q. 89. The heat makes the bond better, does it? *A.* Yes, sir.

X-Q. 90. Does the heat also make it more speedy,—easier to operate speedily? *A.* Yes, sir.

X-Q. 91. Those are the two points, are they? *A.* Yes, sir.

X-Q. 92. You are quite sure about the date when you tried the H-B process, are you? *A.* About the date?

X-Q. 93. Yes. *A.* I am not sure of any dates.

X-Q. 94. It was 1938 that you tried the H-B process? *A.* I am telling you as I remember it.

X-Q. 95. Is that your recollection? *A.* To my recollection, yes I am not sure about it.

Mr. Lyman. All right, that is all.

Mr. Gates. No more questions.

FRANK W. HAWLEY (Sworn).

Direct Examination.

Mr. Gates. With your Honor's permission I am putting on these witnesses, interrupting Mr. Ellis, because I thought their story would meet your Honor's statement to me last night better than some of the things Mr. Ellis had testified to. You wanted to know about the effect of heat, so that I interrupted Mr. Ellis to show your Honor what the effect of heat is. I intend to recall,

with your Honor's permission, Mr. Ellis, to clean up a few little tag ends.

Mr. Lyman. I had not cross examined Mr. Ellis.

Mr. Gates. I will produce him.

Mr. Lyman. I guess you will.

The Court. He is here.

Mr. Lyman. I can see the point of introducing these three workers from somewhere else.

The Court. I don't suppose it makes much difference, so much of Mr. Ellis's testimony went in by stipulation anyway.

Mr. Lyman. I don't object to this witness going on.

The Court. Go ahead.

Q. 1 (by Mr. Gates). What is your full name, Mr. Hawley? *A.* Frank W. Hawley.

Q. 2. Where do you live? *A.* 48 Warren Avenue, Brockton.

Q. 3. What do you do? *A.* Salesman for the Magic Tape.

Q. 4. How long? *A.* Ever since Mr. Ellis has been putting these machines in business. A year ago last spring sometime.

Q. 5. What are your duties as salesman? *A.* Well, I go out putting in machines and showing people how to work them.

Q. 6. Do you do anything more? *A.* Oh, I have to keep chasing around all the time from place to place, trying them out, seeing how they are working, and so forth.

Q. 7. You keep checking up on them? *A.* Yes, sir.

Q. 8. How often do you do that? *A.* Well, some places I may be in twice in a week.

Q. 9. What places are those? Can you tell? *A.* Well, more the nearby places near to Brockton,—most of the factories near to Brockton.

Q. 10. What factories do you see a couple of times a week? *A.* Diamond Shoe—I might be up in there a couple of times a week. The Commonwealth over at Whitman. Knapp Brothers Shoe.

Q. 11. Stone & Tarlow? *A.* Stone & Tarlow.

Q. 12. All of these are in or near Brockton? *A.* Right near Brockton.

Q. 13. Do you cover some factories which are a little farther away? *A.* Down in Maine. I have been out to Binghampton, New York.

Q. 14. How often do you go to Maine? *A.* Why, I plan on going at least once a month, and sometimes I am down there twice in a month, and sometimes it will be six weeks, perhaps, before I get down.

Q. 15. What plants do you go to down there? *A.* Commonwealth at Gardiner and Taylor's at Augusta.

Q. 16. Do you make any visits around Millis or Medford? *A.* Millis, Medford, and Marlboro.

Q. 17. What company do you see at Millis? *A.* J. M. Herman.

Q. 18. How often do you go there? *A.* On an average of once about every two weeks.

Q. 19. Do you go to Milford? *A.* That is what I meant when I said Medford.

Q. 20. About once every two weeks? *A.* Yes, sir.

Q. 21. So that you keep yourself fairly familiar with the operation of those machines? *A.* I do.

Q. 22. Can you identify this machine that is on the stand before you, Defendant's Exhibit A, Mr. Hawley? *A.* Yes, sir.

Q. 23. Do you recall the first machine that was operated? *A.* Yes, sir.

Q. 24. Where, by the way, was the first of these machines operated, to your knowledge? *A.* The first one of these machines was in the Commonwealth.

Q. 25. The Commonwealth Shoe & Leather at Whitman? *A.* At Whitman.

Q. 26. Did you have anything to do with the experiments there? *A.* Yes, sir.

Q. 27. Where were those experiments carried out? *A.* On the top floor of the building.

Q. 28. At some later time was a change made in the location of the machine? *A.* It was put down in the inner sole room.

Q. 29. Where was that? *A.* Down on the ground floor.

Q. 30. That was commercial production? *A.* Yes, sir.

Q. 31. Since that time that that first machine was operated in the Commonwealth Shoe & Leather, have there been any changes in the machine? *A.* Well, there have been so many that I couldn't describe them.

Q. 32. We will try to see if we can't describe some of them Have any changes been made in the heating unit? *A.* Yes, we have had in the Commonwealth Machine—there are different bodies—of course we took and changed the bodies on the bottom part. The water tank at first, before we got into the jar. But there have been as many as nine different tanks there with different heating units.

Q. 33. How did they compare? *A.* The higher the heating unit the better the stuff worked on them.

Q. 34. What kind of a heating unit did you have in there at first? Do you recall? *A.* 40.

Q. 35. Was that changed? *A.* Yes, sir.

Q. 36. To what? *A.* It was changed to 45.

Q. 37. 45 watts? *A.* 45-watt unit.

Q. 38. Was there any later change after that? *A.* Yes, sir; it was changed to a 50, from 50 to 55, from 55 to 60, from 60 to 70, 70 to 80, and 80 to 150, which is now in the machine.

Q. 39. So that the present heating unit is 150 watts? *A.* 150 watts.

Q. 40. That present unit has a thermoswitch, has it not? *A.* Yes, sir.

Q. 41. When was that put in? *A.* I couldn't say, but I think it was the latter part of this last winter.

Q. 42. Was it put in at the same time as the 150-watt heating unit? *A.* Well, I would not dare to run it without.

Q. 43. You have testified about various changes in the power of the heating units. Why were those changes made? Do you know? *A.* So as to improve the sticking qualities.

Q. 44. Do you know that of your own knowledge? *A.* Yes, sir.

Q. 45. Have you observed the operation of the machine before and after the heat was increased? *A.* Yes, sir.

Q. 46. What did you observe? *A.* It formed in quicker and it stuck harder. The operator would only go around once, whereas before they would have to go around a couple of times.

Q. 47. Around with what? *A.* With the former on the insole.

Q. 48. Compare the cutting operation itself before and after these increases were made in the heat. *A.* When you put your sole down on the cloth to cut it off it would catch the length of the sole so that you could cut it off and turn it over and it would not fall off.

Q. 49. What effect did the increase of the heat have on that operation? *A.* It made it quicker.

Q. 50. In what way? *A.* It made it grab instead of falling off; it would stick there.

Q. 51. Does that increase the speed of operation? *A.* Oh, yes, very much. If they have to stop and take their knife out three or four times, it takes so much longer to put it on.

Q. 52. Have you in recent times taken temperatures of the latex in the room? *A.* I have taken them a good many times, hundreds of times.

Q. 53. Did you make a note of those recordings? *A.* I have made some of them. I made some of them on a piece of paper and showed them to Mr. Ellis.

Q. 54. Have you any record of any recordings you have made in the last month or two? *A.* Yes, sir, I have. I would every once in a while make a record of it.

Mr. Lyman. Within a month or two?

Mr. Gates. Yes.

Mr. Lyman. I don't really object to this evidence about what the temperatures are that they are using now, if it has any bearing on the scientific fact. Of course I want it to be understood that what we are trying here is a case that was made before the filing of the bill.

The Court. What was your question?

Mr. Gates. If he had made any temperature readings within the last month or two.

The Court. I suppose you want to establish what is meant by the term "room temperature"; otherwise I would not think it was admissible.

Mr. Gates. I suppose, your Honor, that all these machines are more or less in question, whether they were operated before or after the filing of the bill. We may as well dispose of them all now. For example, if the case ever got to an accounting on the 40-watt, they would try to drag in the 150. And I suggest that we may as well clean the whole matter up now in regard to these machines, those we are using today and those we were using at and before the filing of the bill.

The Court. There have been some changes since the filing of the bill?

Mr. Gates. Yes, your Honor. I think this 150-watt unit was put in a substantial time after the filing of the bill; I think the stipulation says that that change was made in January of 1939, which was at least six months after the filing of the bill. That has all gone in in Mr. Ellis's stipulation.

The Court. What difference does it make what the room temperature was unless it helps me to determine what is meant by the words "room temperature"?

Mr. Gates. I don't think Mr. Hawley can help you there, but there has been some evidence from Mr. Perkins that there was not much difference in the early machine between the temperature of the latex and the temperature of the room. Well now, this has a bearing on that, because it is just simply a question, if you get more heat, the hotter the unit the more heat, and we can work back from these figures to find out whether Mr. Perkins's testimony is inherently credible or not. I think that if you find the facts as to the temperatures with the use of the 150-watt unit, it will become quite apparent that the testimony of Mr. Perkins is incredible. I think if we can find out what the temperatures were with the 150-watt unit, the order of magnitude, we have some

means then of judging the credibility of Mr. Perkins's testimony. If you will recall the testimony, he said that he took the temperature of the latex, that the machine was hot, the heat was on, and strangely enough, although the heat was there the latex was not hot. Now, I should like perhaps to offer Mr. Hawley as a witness to prove that that testimony is—well, rather forced, because when you heat the latex—

The Court. I don't see how you can meet that testimony by showing what the room temperature was a few months ago. The temperature one day would be something, and another day something else.

Mr. Gates. But the effect of Perkins's testimony was that if he heated the water and the water was in contact with the latex, you did not heat the latex. I want to show that when you did heat the water you did heat the latex.

The Court. How are you going to do that by showing what the room temperature was?

Mr. Gates. I am more interested in the temperature of the latex. I will cut the room temperatures out.

The Court. I will take the temperature of the latex.

Mr. Lyman. Of course, your Honor, there is a principle of law that comes into play. Now, no issue is raised legally, I believe, under a bill of complaint except as to what was done before the bill. I don't suppose we can by consent bring in anything that has happened later. So that I think it is inadmissible.

The Court. I should think that you could even make a test today that would be quite helpful in deciding this case.

Mr. Lyman. I realize that this evidence may be pertinent from that point of view, and that is why I do not object to this testimony.

The Court. I think we may proceed.

Q. 55. Now, did you take the temperature of the latex? *A.* Yes, sir.

Q. 56. Within the last two or three months? *A.* Yes, sir.

Q. 57. Now, will you give us some samples of the temperatures and say where and when you took them? *A.* Yes, sir.

Q. 58. Begin around September 11.

The Court I take it that you are referring to the latex that was used in this machine.

Mr. Gates. Yes, sir.

Q. 59. Did you take the temperature of the latex used in the Magic Tape machines? *A.* Yes, sir.

Q. 60. How did you take it? *A.* I took it right in here, right underneath the roll, right under there [indicating].

The Court. All right.

Q. 61. Now will you tell us some of those temperatures that you took, beginning with that of the Diamond Shoe, September 11, 1939? *A.* September 11 I took the temperature of the latex, and it was 126.

Q. 62. 126 what? 126 degrees? *A.* Yes, sir.

The Court. Fahrenheit?

The Witness. Yes, sir. Room temperature at that time was 70 in that place, and that left 56 degrees higher than the room temperature.

The Court. That was with the 150-watt unit?

The Witness. All these late dates are on that.

The Court. That unit was not in at the time the witness Mr Perkins took his?

Mr. Gates. No, your Honor, it was not.

The Court. I think it may be helpful to see how the thing works.

The Witness. We kept going up.

The Court. Go ahead.

Q. 63. Go ahead. *A.* On September 21, the Stratford Shoe in Marlboro. The room—

Q. 64. Only the latex temperature.

The Court. I want the latex.

A. The latex was 102.

On September 25, at the Diamond Shoe in Brockton,—at the particular time I took it it was 114. That is the latex.

At Stone & Tarlow's shoe factory in Brockton, September 25, the latex was 106.

Commonwealth Shoe & Leather, Whitman, September 25 temperature of latex was 108.

At Knapp Brothers, Montello, on September 25, the latex was 116.

At the Diamond Shoe on September 26, Brockton, the latex was 120.

The Milford Shoe, Milford, Mass., September 27, latex was 104. The room temperature in that particular place was 64.

Here is the Stratford Shoe again, September 27. The latex was 112.

I think I have given you about all the late ones I have taken.

Q. 65. When your present machine is delivered from the machine shop, what is the setting of the thermostat? Do you know? *A.* 102. That is by Mr. Ellis's orders to the machinist.

Q. 66. Do you set the machine up in the factory? *A.* Yes, sir.

Q. 67. What do you do when you set the machine up in the factory? *A.* I change it before I ever put anything in it at all.

Q. 68. In what direction do you change it? *A.* I increase the heat.

Q. 69. Do you increase the heat the same amount for all factories? *A.* I intend to. Some places—I will take that back—in some places, if the machine is up close to a window where they are getting cold air—some operators will leave the window open all the time—I will then push it higher than I would if it was out in the middle of the room.

Q. 70. Does the speed of operation at the particular plant have anything to do with the setting you give it? *A.* Yes. If it is a very fast operator I increase it higher than I do with a slow operator, because they are drawing the cement out much faster, with the cold cement going in.

Q. 71. Have you changed every machine that you put out in the way you have testified? *A.* I have changed every one of them several times.

Q. 72. The ones with the thermostats? *A.* Yes.

Q. 73. You have always regulated them up in temperature? *A.* Before we had the thermostat control over it, then we had to change the whole bottom base. Sometimes I would take and change the unit in the factory, take and clean the bottom tray.

Q. 74. Do you know how the operators run these machines and how they keep the water in them? *A.* Yes, sir.

Q. 75. Will you describe how that is done? *A.* Well, wherever we have not this bottle attachment—which is comparatively new—they take this tray right off here and put the water in the jacket underneath.

Q. 76. How often do they do that? Do you know? *A.* Well, they should put in a little every day.

Q. 77. When you set these machines up, do you give any instructions to the operators? *A.* Yes, sir.

Q. 78. What are those instructions? *A.* I always show them about changing the heat, and how to thread up the machine—not changing the heat, but how to keep the water in so as not to burn up the unit.

Q. 79. Do you give them any instructions as to the use of heat? *A.* I only have one man that I allow to change the thermostat.

Q. 80. That is who? *A.* That is Mr. Thebeau at Gardiner, Maine. He is so far away that I showed him how to change it. I felt he was capable of doing it.

Q. 81. Do you give any instructions when you set the machine up as to whether the heating unit should be on or off? *A.* They keep them on all the time when they are running. As a rule, it is always customary in every shop to tell them to shut off the power at night, and then the engineer or night watchman, or someone, turns it on early in the morning so as to have them hot for the operators.

Q. 82. How do you know this? *A.* That is what is requested always, and wherever I have found them it has been that way.

Q. 83. Have you ever tested these machines by touch, let us say? *A.* Yes, sir.

Q. 84. How are they to the touch? *A.* This gets very warm.

Mr. Gates. Your witness, Mr Lyman.

Cross Examination.

X-Q. 85 (by Mr. Lyman). You made these temperature measurements just so you would have them in preparation for the trial of this case, did you? *A.* I did not.

X-Q. 86. You did not? *A.* No, sir.

X-Q. 87. Is it your custom, every time you go to a factory, to measure the temperature of the latex? *A.* Is it what?

X-Q. 88. Is it your custom, every time you go to a factory and see your machine in operation, for you to measure the temperature? *A.* I didn't do it every time, but I do it most of the time.

X-Q. 89. Now, when you went to these factories, the visits you have mentioned were all made in the month of September, that is last month, which you have mentioned? *A.* They may have been.

X-Q. 90. Have you mentioned all of the temperatures you measured during the month of September? *A.* I think I have, yes.

X-Q. 91. Just be sure about that. *A.* I think I have. In fact, I am sure enough to say yes. I never kept particular records of those. Yes, they were all made in September.

X-Q. 92. What? *A.* Those were made in September.

X-Q. 93. That wasn't the question. The question was whether you made any other measurements on any of your machines for latex in September? *A.* Presumably just in September.

X-Q 94. All in September? *A.* No. I have mentioned them all in September, all that I kept record of. I don't think I kept a record of all of them.

X-Q. 95. Did you make any adjustments in the setting of the thermostat at any of these factories where you have made these measurements? *A.* Not since I have taken these tests.

X-Q. 96. You went around, made these measurements, noted them down, but you haven't changed the setting of the thermostat? *A.* I haven't changed the thermostat since these temperatures were taken.

X-Q. 97. Yet this plate says, on the machine, that the latex—the process requires heat of about 120 degrees, doesn't it? *A.* Yes.

X-Q. 98. You found instances, as you have told us, where the temperature was as low as 104 degrees, and you didn't do anything about it? *A.* No, sir. I didn't pay much attention to that plate, as far as I am concerned.

X-Q. 99. The plate doesn't mean anything? *A.* To me, when I am adjusting a machine I don't go by the plate; I go by what I think is needed.

X-Q. 100. The statement on that plate is meaningless to the operator? He is not supposed to interfere with it at all? *A.* The operators read the plate and know they have to keep water in it. We caution them about that. I suppose that is about all it amounts to.

X-Q. 101. That is all it amounts to for the operator? *A.* They would know they have to have heat on all the time, because we caution them about it. If we find a place they do not use heat we would take the machine out.

X-Q. 102. You didn't give us any temperature measurements made at the Herman factory, did you, in September? *A.* No, sir.

X-Q. 103. Did you measure the temperature there? *A.* I did not.

X-Q. 104. Did you give us any measurements taken at the Taylor factory? *A.* In Gardiner, Maine, no, sir.

X-Q. 105. Have you any measurements? *A.* In fact, I haven't been down in their sole leather room.

X-Q. 106. Have you any measurements there from either of these factories, Herman's or Taylor's? *A.* No, sir.

X-Q. 107. Have both of these factories these modern machines of yours, this recent type of machine? *A.* Yes, sir.

X-Q. 108. When were they put in at the Herman place, this modern type, most recent type? *A.* These machines were put in, I would say, last fall.

X-Q. 109. And the same as to the Taylor place? *A.* Taylor's was put in along last spring,—a year ago this last spring.

X-Q. 110. March of 1938? *A.* I wouldn't say March, but I would say early summer or in the spring.

X-Q. 111. I am speaking about the most recent type of machine, Mr. Hawley. That is what I asked you, such as you have on the table there before you. *A.* That has been in for at least five or six months.

X-Q. 112. In both places? *A.* I have changed them several times.

X-Q. 113. At both Herman s and Taylor's? *A.* They have been changed several times. The one that is there now has been there five or six months.

X-Q. 114. This same type of machine? *A.* It is a double machine.

X-Q. 115. Except that it is a double machine? *A.* A double machine.

X-Q. 116. That is true both at Herman's and Taylor's? *A.* Yes, sir.

X-Q. 117. Now I would like to know the date when you made these successive changes in the heating unit from 40 watts to 45 watts. *A.* You couldn't get it from me because I cannot tell you.

X-Q. 118. You don't know the date? *A.* We kept changing and changing.

X-Q. 119. You don't know the dates of any of those changes? *A.* No.

X-Q. 120. What did you do to get new heating units there, buy from some electrical manufacturer? *A.* Yes, sir. Mr. Ellis, as a rule, but sometimes I ordered them and sometimes Mr. Ellis did.

X-Q. 121. Who did you get them from? *A.* The ones I got I bought from the Boston Electric Company in Whitman. Mr. Ellis has bought them himself somewhere else.

Mr. Lyman. If your Honor please, if we could have our morning recess I would like to talk with some of my colleagues.

The Court. We will take the morning recess now, fifteen minutes.

[Morning recess.]

X-Q. 122 (by Mr. Lyman). Mr. Hawley, will you show us the thermostat adjustment on that machine, Defendant's Exhibit A? [Witness indicates.]

Mr. Lyman. The witness has taken off the metal casing attached by four screws to one side of the machine.

Mr. Gates. Three screws.

Mr. Lyman. Three screws.

The Witness. Most of them have four.

Mr. Lyman. In order to expose the thermostat attachment the witness now indicates a screw which projects from the hexagonal—

The Witness. This is the thermostat, your Honor [indicating]

Mr. Lyman. The witness indicates a brass-coated element inside the water tank as being the thermostat.

Mr. Gates. That is the round element.

Mr. Lyman. The round brass-covered instrument, as being the thermostat. The witness indicates a screw projecting from the hexagonal nut attached to this element as being an adjustment. Is that right?

The Witness. That is right.

The Court. You have a key or something that fits in there?

The Witness. Yes, sir, I have a big screwdriver.

The Court. Just a screwdriver?

The Witness. Yes, sir.

The Court. Turn it one way or the other.

[Witness illustrated.]

X-Q. 123. I wish you would set it on to 102 points, which you say it always is when it is up. *A.* I couldn't without water in it because I do this with a thermometer.

X-Q. 124. Let me get that straight. Before any machine goes out from the factory you put water in? *A.* The machinist that makes that puts water in there.

X-Q. 125. And what does he do? *A.* And he sets his ther-

mometer in and keeps it turning until he gets it up to 102, and if it is above 102 he turns it right to turn it down.

X-Q. 126. He sets it in such a way that the water remains permanently at a temperature of 102? *A.* It will go back. When it gets up to that state it will fall back about two degrees and then comes on automatically.

X-Q. 127. I want to know how he determines the time when he is to set this in. Let me get his procedure. He puts in some water? *A.* Yes.

X-Q. 128. Then what does he do? *A.* He sets his thermometer to see when he is up to 102, and then doesn't turn it either way. He sets it at 102, and when it begins to fall back he knows it has gone the limit there, 102.

X-Q. 129. If it tends to get above 102 he turns it down? *A.* Yes.

X-Q. 130. Until the heat is turned off at that point? *A.* Yes.

X-Q. 131. And if on the other hand it doesn't get up to 102 he turns it up a little more? *A.* Yes.

X-Q. 132. Then when you set up the machine in a factory you make another adjustment, you say? *A.* Yes.

X-Q. 133. How do you determine what that other adjustment is going to be? *A.* After the latex is in there, I start in with my thermometer and keep a watch on it where it has to be, and if it isn't hot enough I turn it up.

X-Q. 134. You keep your thermometer in the latex? *A.* In the latex.

X-Q. 135. What do you consider hot enough? *A.* It would depend on where the machine set in the shop and how fast the operator was.

X-Q. 136. Take it for a normal operator and for a normal setting in the shop. *A.* I would get it up to over 100.

X-Q. 137. How much? *A.* It depends on the speed of the operator.

X-Q. 138. I am asking about a normal operator. *A.* I have one that has tested as high as 56—

X-Q. 139. Kindly confine yourself to my question, Mr. Hawley. A. Yes.

X-Q. 140. Your point is—I am asking you for the ordinary average run of operator. A. I want to get it up to 120 or 125, along there.

X-Q. 141. For the average normal operator? A. Yes.

X-Q. 142. You want to get it up to 120 or 125? A. Yes.

X-Q. 143. And for the slow operator you want to get it up even higher? A. Yes, I would like to have it a little higher.

X-Q. 144. How high? A. Run it up to—fast operator, you say, or slow?

X-Q. 145. Slow. A. Turn it down until you get it around 110 or something like that.

X-Q. 146. And for the fast operator you want to get it up to what? A. To 120 or 125, and it would depend on whether it is setting near a window or not.

X-Q. 147. If it sets near a window? A. It cools it off, so you turn it up higher.

X-Q. 148. You change this adjustment from season to season? A. No, only just as cold weather comes on, if there is cold air blowing on it you may have to.

X-Q. 149. Do you ever do that? A. I have changed them.

X-Q. 150. With the winter coming on? A. Yes, I have changed them. You want to keep the latex up, to have it hot.

X-Q. 151. I want exactly your procedure. I don't want any guessing. I want your recollection as to what you did when you set this thing up in a normal factory for a normally fast operator, not excessive, but the average run of operator in a normal position, what temperature do you want? A. Put it up around 125 or 130.

X-Q. 152. Have you ever done that and measured it? A. Yes.

X-Q. 153. How does it happen that all these temperatures you took at these factories were lower than that, some as low as 102? A. We are starting in on cold weather here, for illustration, and I took—

X-Q. 154. How does it happen if you set all these machines for use in these factories that you have mentioned for operation at 120 or 125, that when you measured them in September they were down, some as low as 102 or 104? *A.* Because I haven't them up where I want them yet.

X-Q. 155. But yet you didn't take any steps in these factories to increase the heat, did you? *A.* I haven't taken any steps for increasing them in some places.

X-Q. 156. You have told me already, have you not, in these factories you noted the temperatures but you didn't make a single change in the setting of any one of them? *A.* Other places where these thermostats are in, I have. I meant up there in other places—

X-Q. 157. Aren't there thermostats in these places you visited in September? *A.* Yes.

X-Q. 158. Your explanation is out, for they had thermostats, and you could have changed them? *A.* I could have, yes.

X-Q. 159. But you didn't? *A.* No. As it gets colder—

X-Q. 160. In these factories was there anything abnormal about the speed of the operators? *A.* Well, I don't know.

X-Q. 161. Be specific. These factories that you mentioned where you took the tests, are the operators abnormally slow in any one of them? *A.* I wouldn't say so, no.

X-Q. 162. Are they abnormally fast in any one of them? *A.* Average.

X-Q. 163. That is, an average for all? *A.* Yes, yes.

X-Q. 164. Are these machines in these factories in an abnormal position with reference to windows, in any of those places? *A.* Some are and some are not.

X-Q. 165. Which one is abnormal in those you have mentioned? *A.* For instance, the Commonwealth in Whitman

X-Q. 166. That is abnormal? *A.* Yes.

X-Q. 167. You have to have the setting higher there than you do in other places? *A.* Yes, and I keep boosting it up until I get it higher.

Mr. Lyman. I ask that that last be struck out, that last part of that answer.

The Court. Yes.

X-Q. 168. Has that particular apparatus you presented to the court been tested? A. I haven't tested it.

X-Q. 169. It was set? A. Set by the machinist.

X-Q. 170. Would that, as it stands, bring the temperature of the water up to 102? A. Yes, sir.

X-Q. 171. And keep it there? A. Yes, sir, outside of when it falls back. That is under thermostatic control.

X-Q. 172. The thermostat ought to keep the temperature of the water, as it is now set, at 102? A. It will go down two or three degrees, then it will automatically open.

X-Q. 173. It will open and restore to 102, and automatically shut it off? A. Yes, sir.

X-Q. 174. That is as it is now set? A. Yes, sir.

Mr. Lyman. I think you may put the parts together.

[Witness puts machine together.]

X-Q. 175. You have spoken about fast workers and slow workers, Mr. Hawley. What do you mean by a fast worker in terms of production of reinforced insoles? A. A man that is cutting very fast.

X-Q. 176. I want to know in terms of actual pairs. I want something more definite than that. How many? A. I didn't keep any track of them, simply know nothing about it. I am not a shoe worker.

X-Q. 177. How do you know whether an operator is a fast one or a slow one? A. I go by looking at him.

X-Q. 178. You take a look at the operator when you set up this machine and judge whether he is a fast one or slow one for which to set it? A. I watch him operate a while first.

X-Q. 179. You watch him operate on a machine for how long? A. I might watch him for a day.

X-Q. 180. During that time the machine is set at exactly as it comes from the factory to maintain water temperature? A. Oh.

no. I might start in at the first half-hour and change it a half a dozen times in half a day.

X-Q. 181. All the machines you knew about at that time had this same sort of a nameplate on them that appears down at the base of Exhibit A, did they? *A.* I think that is—I would not say for sure.

X-Q. 182. Do you remember whether any of the earlier machines had different nameplates saying something different about the temperature? *A.* I don't know.

X-Q. 183. You don't remember that? *A.* No.

X-Q. 184. Did the earlier machines have any nameplates at all? *A.* I think they had some out to start with that did not have any on them.

X-Q. 185. You say they didn't have anything about temperature? *A.* They did not have any plate at all, as I remember.

X-Q. 186. Did you have some nameplates out on the earlier machines that didn't say anything about temperature at all? *A.* I couldn't say in regard to that.

X-Q. 187. How long does it take for this machine to develop the proper heat, the desired degree of heat for the latex? *A.* If you should start with cold weather I would say it would take close to an hour.

X-Q. 188. Is it your statement, Mr. Hawley, you cannot make properly reinforced insoles with this machine with the Magic Tape material unless there is some heat applied? *A.* I never tried it to see whether you could or not.

Mr. Lyman. That is all.

ELMER A. ELLIS, Resumed.

Direct Examination, Continued.

Q. 57 (by Mr. Gates). You have testified in your stipulation, Mr. Ellis, that you operated a machine somewhat like the one on the bench before you, Defendant's Exhibit A, on the fifth floor of the Commonwealth Shoe and Leather Company? *A.* I did.

Q. 58. How was that machine operated with regard to heat?

A. It had a 40-watt heat unit in it, the one we had on the fifth floor.

Mr. Lyman. What is that?

The Witness. I say it had a 40-watt heat unit in it.

Q. 59. Did you run it without turning on the heat unit of it? *A.* No.

Q. 60. When the machine got down on the first floor at the Commonwealth Shoe and Leather Company plant in Whitman, how did you operate it in regard to heat? *A.* We always had heat on. We had a board built back of the machine with a red light on it. That told whether the heat was on the machine or was off.

Q. 61. What happened in case the red light went off? *A.* It didn't go off; I never saw it off. It went off at night after they had gone home, but it was always on whenever I went in there.

Q. 62. What kind of a heating unit was in that first machine? *A.* A 40-watt heating unit.

Q. 63. At some later time was there some change made in the heating unit? *A.* There was.

Q. 64. Why was that change made? *A.* To get more heat. They were calling for more heat.

Q. 65. Who was calling for more heat? *A.* Margaret called for more heat. It was at the Commonwealth Shoe Company plant, and the people, the operators that were using the machines.

Q. 66. Have you got requests for more heat from other sources? *A.* We did. Mr. Hawley brought them in.

Q. 67. Did you at any time put 60-watt units in the machines? *A.* We did.

Q. 68. When did you put 60-watt units in the machines? *A.* The first 60-watt units we bought were delivered to me on May 23rd, six of them.

Q. 69. May 23rd of what year? *A.* 1938.

Q. 70. What was done with those units? *A.* We put them into the machines as fast as we could put them.

Q. 71. How many machines did you have out at that time? *A.* We had five, if I remember.

Q. 72. All those machines were changed? *A.* The five in operation in those machines were changed.

Q. 73. In fixing the date of this change, to what have you referred? *A.* I have referred to a bill from the Dalton Electric Company.

Q. 74. For these 60-watt units? *A.* Yes.

Q. 75. That was May 23, 1938? *A.* That was May 23, 1938, yes, sir.

Q. 76. Have you any way of fixing when the commercial operation began on the first floor of the Commonwealth Shoe and Leather Plant at Whitman, Mass.? *A.* Only by the first bale of duck coated and sent them.

Q. 77. Can you tell when the first bale of duck was sent to the Commonwealth plant at Whitman? *A.* Yes, I can.

Q. 78. Will you give that date? *A.* The first bale of duck was sent to the Commonwealth Shoe Company on April 22. It was sent from the Clifton Manufacturing Company at Mattapan.

Q. 79. May I have that? [Witness hands paper to Mr. Gates.] *A.* Yes.

Mr. Gates. Is there any objection? I am going to offer this in evidence [handing paper to Mr. Lyman].

Mr. Lyman. No objection, Mr. Gates.

Mr. Gates. I am going to offer in evidence as Defendant's Exhibit C a bill from the Clifton Manufacturing Company for the first shipment of duck.

Q. 80. What shipment is this? *A.* This is a shipment of coated duck.

Q. 81. Is it the first, or second, or what? *A.* That is the first shipment.

Mr. Gates. I offer this in evidence as Defendant's Exhibit C.

[Bill of Clifton Manufacturing Company for first shipment of duck to Magic Tape Company is marked "Defendant's Exhibit C".]

Q. 82. When did the commercial operation begin on the first

floor of the Commonwealth plant with reference to the date of that bill? *A.* Well, it would not be that date.

Q. 83. When would it be? *A.* It might be the next day or it might be the day after that. These goods had to be delivered.

Q. 84. Could there have been commercial operation on the first floor of the Whitman plant on April 20, 1938? *A.* I don't believe so.

Q. 85. After the 60-watt unit was put in the machine were there any other changes made? *A.* Not right away.

Q. 86. Ultimately there were changes made? *A.* Yes, they went on before the 60-watt units.

Q. 87. Why were those changes made? *A.* To get more heat, to get the latex hotter. They were made at the request of—Mr. Hawley was always bringing in requests for more heat.

Q. 88. Where did you get the top coating you sold as top coating? *A.* Some from Heveatex Corporation and some from the Vultex.

Q. 89. Where did you get the precoated duck you sold, or was precoated for your customers? *A.* From the Peters Manufacturing Company. The bill says Clifton. That is part of the Steadfast Rubber Company machine.

[The answer is read.]

A. (Continuing). That is the second source. There are two sources we bought from there.

Q. 90. Have you prepared a list of the shoe factories where your machines are at present installed? *A.* I have.

Q. 91. Will you give us those names, please? *A.* I have four machines, two in the Commonwealth in Whitman and two in the Commonwealth in Gardiner; I have one machine at the Diamond Shoe Company in Brockton; I have one machine at Knapp Brothers in Brockton; I have Stone & Tarlow in Brockton; two machines at J. M. Herman's; one machine at the Milford Shoe; one machine at A. G. Walton's; I have two machines at the Stratford Shoe Company; I have two machines at E. E. Taylor's; I have two machines in the General Shoe Company in Nashville

Tennessee; I have two machines in Perry Norvell Company, in Huntington, West Virginia; I have two machines at the J. Landis Shoe Company; I have one machine at the Bedford Shoe; and I have one machine at the H. G. Godman Shoe Company in Columbus; I have one machine at the Red Cross plant in the United States Shoe Company in Cincinnati,—24 machines, as I figure it, all told.

Mr. Gates. Your witness, Mr. Lyman.

Cross Examination.

X-Q. 92 (by Mr. Lyman). You were employed by the B. B. Chemical Company when you invented the process of the patent we are suing you on? A. I was.

X-Q. 93. And they paid you $8,000 for that patent? A. They did.

X-Q. 94. That was in 1929 or thereabouts? A. It was in 1929. I believe they paid me along in November.

X-Q. 95. And thereafter you knew what they were doing, the B. B. Chemical Company, with the process? A. I did in a general way, yes.

X-Q. 96. You knew that they were putting it out on a large scale and it was meeting with great success? A. No, at that time, no. It was not going out on a large scale.

X-Q. 97. Perhaps not, in 1929? A. No.

X-Q. 98. But in the following year it went along increasingly? A. Very, very rapidly.

X-Q. 99. And because it was a great improvement over anything that had been available before that? A. Yes, I believe so.

X-Q. 100. They spent a lot of money in getting that process onto the market, did they, or did it sell itself? A. They had all they could do to keep up with the orders, without sending for them.

X-Q. 101. How do you know all that, Mr. Ellis? Did your work in those days bring you into shoe factories? A. Well, some.

X-Q. 102. You say your Magic Tape Company was organized about 1929? A. In December.

X-Q. 103. What business did you conduct as the Magic Tape Company? A. Well, I made adhesive tapes, but I went into a specialty of rubber compounds.

X-Q. 104. To whom did you sell those? A. I sold them to—very universally sold. I sold them, and a good bundle of the western stuff was sold to a Chicago distributor.

X-Q. 105. Did that business carry you into shoe factories? A. No.

X-Q. 106. How was it then that you knew about the progress of the business in your process? A. The process had started before 1929. The idea was sold to the United Shoe before the Boston Blacking Company took it over. I cannot remember their contact man.

X-Q. 107. I am not speaking about that. But in later years you watched the progress of this? A. A great deal of that was hearsay.

X-Q. 108. You saw the materials they were selling, did you? A. No, I never went to see.

X-Q. 109. You knew that the H. B. Company and the Pepperell Company were starting out in this business with a cold process? A. Some time later I did.

X-Q. 110. Some time later, about 1932? A. Well—I forget the salesman for the Pepperell, but he came in to see me about latex.

X-Q. 111. He told you what they were going to do? A. Told me what they hoped to do.

X-Q. 112. That was in 1932, before it started? A. I couldn't tell you what year it was.

X-Q. 113. You knew that the H. B. Products Company was coming out and using latex in this cold process? A. Not at that time, no.

X-Q. 114. A little later? A. The only thing I knew of it for a long while was the Pepperell was working on it.

X-Q. 115. You knew the Pepperell Company was coming out with a cold process? A. I knew they were working on it.

X-Q. 116. A cold process on which they used latex as adhesive? A. I knew.

X-Q. 117. You knew altimately they had gone into this business, and the H. B. Products Company was going into this business under licenses from the plaintiff? A. I did some time afterwards.

X-Q. 118. You knew it was going well with them? A. I didn't say that; I did not know.

X-Q. 119. You knew they were using latex as an adhesive? A. I understood they were.

X-Q. 120. You knew that the plaintiff was using latex adhesive in this so-called Gold Top? A. Gold Top was brought out after I left the B. B. Chemical Company. I believe I am correct there.

X-Q. 121. So you say that the B. B. Chemical Company, to whom you had sold this patent, was making a lot of money at that time out of it, there was a big business? A. I don't know how much they were making.

X-Q. 122. You decided you would like to get some of that business, right? A. Hardly that, no. I worked to increase sales.

X-Q. 123. Didn't you decide that you wanted to get some of that business that the B. B. Chemical Company was doing with your patent? A. I would presume I wanted some of the business —I wanted to increase my business.

X-Q. 124. You wanted to take away some of the business that they were doing under your process? A. Well, all right, we will let that stand.

X-Q. 125. You decided you would use latex such as the B. B. Chemical Company was using as part of its product, and as the Pepperell Company and the H. B. Products were doing, that is correct? A. I decided I would use heat.

X-Q. 126. You decided first you would use latex? A. I decided—I wondered what heat would do to latex at that time.

X-Q. 127. You knew that it would not be safe for you to use this latex unless you applied heat to it—is that right? A. No; we will change the wording on that.

X-Q. 128. What? A. We will change the wording on that.

X-Q. 129. All right, change the wording. A. I wondered if heat would make it stick better.

X-Q. 130. You knew that your patent had wording in it that talked about room temperature, didn't you? A. All my experiments—

X-Q. 131. Just answer the question. A. Wait a minute and I will tell you—were carried on strictly under my counsel. I went to my counsel to find out if I was free on everything that I did.

X-Q. 132. To Mr. Hodder, you mean? A. To Mr. Hodder. Mr. Hodder has been counsel for me ever since I left the Boston Blacking Company.

X-Q. 133. You were told then that you could not go into this process unless you used a material degree of heat in the latex? A. No; I was told that heat cleared any sign of infringement of the patent, that by my using heat, when I found it worked better—by my using heat, it was not infringing.

X-Q. 134. On your first machine you had a nameplate, didn't you? A. I did.

X-Q. 135. What did that nameplate say about heat? A. Well, the first plate I had made is the plate that is on this machine, but unfortunately I made a mistake in the patent serial numbers. Is this the one that is buffed?

X-Q. 136. I don't see anything on it. Yes, it is buffed. A. There are my serial numbers there on the other patent, and I made a mistake in one of the numbers, so that I set them aside, and I had those other plates and I put them on, and I was talking with Mr. Hodder one day and he said, "I like the wording of that better", so that I buffed that off and put these plates on.

X-Q. 137. The first plate you had didn't say anything about 120 degrees temperature? A. No, it did not, but I can't tell you just what it did say.

X-Q. 138. Did it say anything about temperature? A. Yes, it did.

X-Q. 139. Mr. Perkins has said that the nameplate that he saw on the machine out there at the Commonwealth Shoe Company said that "the process requires that the emulsion used in this machine be kept at a temperature well above room temperature". *A.* I believe Mr. Perkins is correct.

X-Q. 140. What did you mean by "well above room temperature"? *A.* Oh, I don't know what I meant. I can't describe that.

X-Q. 141. Was that your wording or your counsel's wording? *A.* I won't attempt to tell you that.

X-Q. 142. At any rate, you don't know what it means, "well above room temperature"? *A.* Well, no, I guess I will have to confess ignorance there.

X-Q. 143. You don't even know what room temperature is, do you? *A.* Yes, I do. I think I do.

X-Q. 144. What do you think room temperature is? *A.* I think room temperature is the temperature of this room at the present time.

X-Q. 145. Then the thing that you are uncertain about is the expression "well above room temperature"; you don't know what that means? *A.* I classify room temperature, if it means room temperature, as the temperature of the room at the time and place.

X-Q. 146. The room temperature varies, of course, in different seasons and different factories? *A.* It certainly does.

X-Q. 147. At the time when you put that first nameplate on that said that this should be kept well above room temperature, you had a 40-watt unit in the machine? *A.* We did.

X-Q. 148. Perhaps you don't know what you meant when you said that the temperature should be kept well above room temperature, but can you tell me this: How much above room temperature ought your emulsion to be kept at in order to have proper operation? *A.* Oh, I don't think I am qualified to answer that question. I don't think I am technical enough for that.

X-Q. 149. In other words, you don't know? *A.* I don't think I am technical enough for that.

X-Q. 150. Do you know that your process would not operate just as well at room temperature? *A.* I do.

X-Q. 151. How do you know that? *A.* Because I did a lot of experimenting with the heat.

X-Q. 152. You know that fact all right? *A.* I do.

X-Q. 153. Is one degree above room temperature enough? *A.* No, it is not.

X-Q. 154. Is two degrees? *A.* No.

X-Q. 155. Three? *A.* No.

X-Q. 156. Four? *A.* Listen: At five degrees you can begin to see a difference if you look for it.

X-Q. 157. At five degrees you say a difference begins to show? *A.* Begins to show.

X-Q. 158. Five degrees above room temperature. But that does not show enough—is that right? *A.* I am not wording that right.

X-Q. 159. All right. *A.* At five degrees above 80 it begins to show.

X-Q. 160. Five degrees above 80 degrees Fahrenheit it begins to show? *A.* Yes.

X-Q. 161. At 90 degrees Fahrenheit is there any difference? *A.* There is no great marked difference between 90 and 85. It begins to show up.

X-Q. 162. What about 95 degrees? *A.* You can see a difference.

X-Q. 163. Then there is some difference, is there? *A.* Yes, sir.

X-Q. 164. How about 100 degrees? *A.* 100 degrees is better.

X-Q. 165. Is better? *A.* Yes, sir.

X-Q. 166. Operating at 100 degrees is there any material difference from the operation at the ordinary room temperature? *A.* There is a difference.

X-Q. 167. How do you know that? *A.* Because we have tested it. I used 7000 yards of duck experimenting before I let these things go out.

X-Q. 168. Would a temperature of 100 degrees Fahrenheit be satisfactory for that operation? *A.* It would be a great deal better

than room temperature. We went along well when our temperature was 97 and 98.

X-Q. 169. Is there any advantage in going up to 120 degrees as compared with 96? *A.* Yes. I wish I could go to 170.

X-Q. 170. You would like to go to 170? *A.* I wish I could.

X-Q. 171. Why don't you? *A.* That is just what I am trying to do, is to develop a latex that will stand up without scumming. We can get instantaneous action if we can get that high.

X-Q. 172. You would like to get to 170 or higher, would you? *A.* I would like to.

X-Q. 173. Why didn't you go above 120? *A.* I have given you my answer, sir.

X-Q. 174. You have? *A.* It scums over. The latex in here, on your roll, becomes a very scummy mess.

X-Q. 175. At what temperature does it begin to scum over? *A.* It begins to show that at 90, and as you go on, it scums very much faster.

X-Q. 176. Does it depend upon the kind of latex you are using? *A.* It would, yes.

X-Q. 177. Do you supply different types of adhesive? *A.* I have two grades.

X-Q. 178. What are those two grades? *A.* They are furnished me by Vultex. One is the 60 per cent concentrated latex base, and the other one has the rubber content down a little.

X-Q. 179. You say that the Vultex people supply you with a 60 per cent concentrated latex? *A.* I beg to correct that. I think that is the Heveatex. The Vultex supply me with the lighter one.

X-Q. 180. The Heveatex Corporation supplies you with the 60 per cent concentrated latex material? *A.* Yes, sir.

X-Q. 181. And the Vultex Company supply you with a— *A.* A lower rubber content.

X-Q. 182. What is the percentage? *A.* Oh, 6 to 8 degrees lower.

X-Q. 183. You don't mean degrees, do you? Per cent? *A.* Per cent. It runs about 52 per cent.

X-Q. 184. You mean, then, that the Vultex people supply you with a 50 per cent concentrated latex? A. A little rising 50 per cent.

X-Q. 185. Do you know what is put into the latex by Heveatex? A. No.

X-Q. 186. You don't know whether there is anything in it or not? A. I do know that I originally started—I am going to get the word right this time—with gum tragacanth, and I asked them to purchase it, and they said they had something that was a lot cheaper and they would use that. Now, what that something is I don't know.

X-Q. 187. Does that apply also to your purchases from Vultex? A. Yes, sir. The stuff is already there.

X-Q. 188. Both Heveatex and Vultex put in something that you don't know what it is? A. They do.

X-Q. 189. Instead of latex? A. They do.

X-Q. 190. Are those two products the only ones that you are now supplying to your trade? A. They are.

X-Q. 191. For the top adhesive? A. They are.

X-Q. 192. Are they the only types of material that you have ever supplied to your trade? A. They are not.

X-Q. 193. What other type have you supplied to the users of your machines, other than those two? A. Well, I had one that we called 45, that had a heavier body than the one I am telling you about now, that Vultex makes for me. That is, not a heavier solid body, but it was a heavier fake body, just blown up.

X-Q. 194. Where did you get that material? A. I got that material from Vultex.

X-Q. 195. Do you know what was in that material? A. No, I do not.

X-Q. 196. For how long did you supply that material to your customers? A. Only a short while.

X-Q. 197. When was it that you supplied that material to your customers? A. Why, I should say from July, 1938, maybe for three months, and maybe not that long.

X-Q. 198. Now, as to this base coat of yours, you say you have two sources of supply, one the Clifton Manufacturing Company, and the other the Peters— A. Peters Manufacturing Company, Wollaston.

X-Q. 199. By that do you mean that you send duck to them to be precoated? A. No; I mean the shoe manufacturers send their duck in to them, and I send the coating to them. I make the coating.

X-Q. 200. That is, you make the coating? A. I make the coating and they put it on and coat it for me.

X-Q. 201. I suppose the formula by which that coating has been made has been stated in the stipulation. A. The particular one. There were 7 bales of duck done with that coating only.

X-Q. 202. That was the first formula. The first formula is the one that is stated in the stipulation? A. Yes. The next formula, which is the one I am using now, is 200 pounds of smoked sheets, 2 pounds of RPA No. 1, and 100 gallons of naphth... I believe that is in one of my affidavits.

X-Q. 203. I think that is in the affidavit. That has been used, according to the affidavit, by you continuously since about the first of July? A. Absolutely; I have not changed or varied from it.

X-Q. 204. Since the first of July, 1938? A. Yes.

X-Q. 205. What exactly does the heat that you use do, Mr. Ellis? Just how does it act to improve the operation? A. I wish I could be technical to you, but I can't. It evaporates the water in the latex, is all I can give you.

X-Q. 206. You think the important result is due to the evaporation of later in the latex? A. It is evaporation of the water, I think, that gives us the tack.

X-Q. 207. You mean, in the interval between the time that the adhesive is applied to the duck and the time when it is formed in by the operation, there is an increased evaporation of the water in that coating of latex due to the fact that the temperature is higher? A. It is very noticeable.

X-Q. 208. You think that is the reason? A. I think it is the reason.

X-Q. 209. Just how does that show itself? It evaporates more quickly? A. Well, it bites.

X-Q. 210. Suppose your material be used without any heat at all. Can you get just the same results? A. By waiting a period of-time, yes.

X-Q. 211. Well, by waiting a period of time you get just the same results? How long a period of time? A. Oh, I would not attempt to answer that for you.

X-Q. 212. A matter of ten seconds? A. Oh, no, no, no.

X-Q. 213. More than ten seconds? A. It is more than ten seconds.

X-Q. 214. More than ten seconds? A. Yes.

X-Q. 215. Say a half minute? A. Why, I don't think I can intelligently answer that.

X-Q. 216. But you have made thousands of experiments, Mr. Ellis. A. I have, but not with a time stop watch. I have tried the bite. I have made those experiments, which we will give to you later.

X-Q. 217. In the ordinary shop how long a period of time passes between the moment when the adhesive is applied to the duck and the moment when the operator does the preforming? A. That is not an answerable question. It varies very materially in the factories that you work in.

X-Q. 218. Let us have some outside limits. A. In the Diamond Shoe Company?

X-Q. 219. Yes. A. Oh, 5 seconds.

X-Q. 220. In the Diamond Shoe Company, 5 seconds? A. Yes.

X-Q. 221. All right. That would be pretty quick? A. Very quick. Oh, I don't know. I paid particular attention to that shop, to get something outside of that.

X-Q. 222. Well, it is the habit of the operators, isn't it, to pull out a strip of this tape sufficiently long so that they can cut three

or four insoles from it? *A.* Not in all shops. It is the habit there, yes.

X-Q. 223. It is a habit to do that? *A.* I made a misstatement.

X-Q. 224. So that the time that elapses between the application of the adhesive to the duck and the preforming operation depends upon how long a strip of duck the operator pulls out of the machine at one time? *A.* It depends upon the conditions under which the operator works in the factory.

X-Q. 225. That is one of the conditions, isn't it,—whether he pulls out a couple of feet or 4 feet? *A.* It is pliable and formable the minute a length of it has left the machine.

X-Q. 226. That was not the question. I was asking you about the actual practice. *A.* I told you the best I could about the practice.

X-Q. 227. You say at the Diamond the operator may be forming within 5 second of the time that the adhesive is applied to the duck. Now, in other factories how long a time? *A.* There are other factories which are nearly up to that, where one cuts, one forms, in teamwork, and it is pretty fast. But where one cuts and forms themselves it is slower.

X-Q. 228. Now, in the use of your machine which system prevails usually; the team, or does one operator do all the work? *A.* Oh, I would have to figure that out. I couldn't tell you which did prevail. But offhand, I would say teamwork.

X-Q. 229. Teamwork? *A.* I should say so.

X-Q. 230. Have you any specimens here of your latex material? *A.* We have not.

X-Q. 231. I would like to have you produce some. Have you some in town here? *A.* No.

X-Q. 232. Where can you get it? *A.* I could get some from Brockton.

X-Q. 233. I wish you would. I would like to see a specimen this afternoon, if we can, of each of the two types of latex adhesive that you are now supplying. Can you get them in this afternoon? *A.* We will try to get them.

X-Q. 234. A gallon sample of each of them? A. If you want a gallon I will get you a gallon.

X-Q. 235. I would also like to see some of the precoated duck that you are now supplying with your machine. A. We will gladly get it for you.

X-Q. 236. Can you get that this afternoon too? A. I can get that at home.

X-Q. 237. A roll of it?

The Court. Haven't you got that here? This is Magic Tape duck [indicating roll].

The Witness. That is the duck we are now using. This is the coating we are now using.

Mr. Lyman. The witness identifies a roll of duck which has been marked "Exhibit 8, 4612 Equity", that having been attached to the affidavits filed by plaintiff in connection with the motion for preliminary injunction in this case.

The Witness. I would very much rather get you a sample. I think that is it.

The Court. Well, get another one, if there is any doubt about it.

The Witness. I will get a sample.

X-Q. 238. I should take it that the machines that you now have outstanding are all like this machine, Defendant's Exhibit A. A. To my knowledge they are all the same as this. There are two exceptions on that bottle, where there was not room on the bench to get the bottle in.

X-Q. 239. Supposing, Mr. Ellis, that you take your machine and materials into a factory where the temperature of the room happens to be 70 degrees, and you, by your heating unit, raise the temperature of the latex to 90 degrees. That operation would be all right? A. I do not take the machine into the factory; I do not install any.

X-Q. 240. We will avoid that dilemma that you do not go into the factories by supposing you were operating in your own

workshop or laboratory. Where do you perform your experiments? *A.* I perform them all in the factory.

X-Q. 241. In what factory? *A.* C. S. Pierce Company in Brockton, in their cement shop.

X-Q. 242. All right. We will assume that as the scene of this experiment. One day, let us assume, a day in the winter, the temperature in that room is 65 degrees? *A.* Yes.

X-Q. 243. You put on your apparatus and it heats up the latex so that it is 85 degrees, and then you operate it and make some reinforced soles. Now, supposing you come back with the same apparatus on a day in August, with the same materials, the same method of operation, and the temperature in that room happens to be 85 that day, and you do not use any heat on your material. Is there going to be any difference in the results? *A.* I cannot intelligently answer that question.

X-Q. 244. Your answer is that you don't know? *A.* I don't know; I haven't tried it.

X-Q. 245. You don't know? *A.* I haven't tried it.

X-Q. 246. Have you ever tried operating your materials without heat, without added heat? *A.* No.

X-Q. 247. So that you don't know what the situation would be if they were run without heat? *A.* No.

X-Q. 248. Is that correct? *A.* I have not tried them, no, for some time.

X-Q. 249. Ever? *A.* When I started I tried.

X-Q. 250. I will ask you again to answer the question which you avoided answering on the ground that you didn't know,—the question about those two situations in the Pierce factory. Would there be any difference in the operation of your process, in the quality of the product in one case where the temperature of the room was 85 and no heat applied to your material, and in another case where the same material was used and the same apparatus, and the same procedure in every way, and the room temperature is below 85 and the heat brings the latex up to 85?

Would there be any difference? *A.* I will answer that now: I don't know.

X-Q. 251. You answer that you don't know? *A.* I do.

X-Q. 252. Are you a chemist? *A.* I am not.

X-Q. 253. Do you know anything about gum tragacanth? *A.* That you have got as bad as me. No, I do not.

X-Q. 254. Now, when you introduced your process, Mr. Ellis, you offered it for a much lower price than the B.B. price—is that right? *A.* I did.

X-Q. 255. A very much lower price? *A.* I offered mine at 8½ cents.

X-Q. 256. As against a price of B.B. of— *A.* 11½ cents, I believe.

X-Q. 257. 11½ cents? *A.* Yes.

X-Q. 258. So that your customers are buying your materials and services at a material reduction in cost as compared with the plaintiff's material and service? *A.* Correct.

The Court. On what is the price based?

Mr. Lyman. The price, your Honor, according to the stipulation—that is stated in the stipulation—

The Court. All right.

Mr. Lyman. I might remind your Honor that that is a lump price for the four things that the plaintiff does.

The Court. Measured by what?

Mr. Lyman. Measured by the number of web yards of material that are used in the process.

The Court. That is what I was after.

Mr. Lyman. And this price that the witness names is the price per web yard that is charged.

X-Q. 259. I would like to know how we can test the validity of these theories of yours, Mr. Ellis, that the heat does some good in your process. Let me ask you this again: Supposing we take your materials and machine, with the heat on, and then we take your materials and one of your machines with the heat off, and suppose the operator does some reinforcing of insoles in exactly

the same way with those two materials and with exactly the same time interval. *A.* We have that.

X-Q. 260. I would like to ask you, then, what difference you will find in the products? *A.* I can't answer that.

X-Q. 261. Will you find any difference in the product? *A.* You will not. You will find a difference in the working.

X-Q. 262. How will you detect that difference in the product? *A.* How would I detect it?

X-Q. 263. Yes. How can anybody detect it? *A.* You mean, in the finished article?

X-Q. 264. Anywhere along the stage. *A.* You will notice it at the time.

X-Q. 265. Yes. But you are saying that after those experiments have been performed, these insoles have been reinforced, you can't tell by looking at them which was made without heat and which was made with heat? *A.* No, sir. It is only in the operation of making.

X-Q. 266. Operation of making what? *A.* The inner sole.

X-Q. 267. But I am assuming, Mr. Ellis, that in this experiment the operator acts exactly in the same way, with the same time interval, treats both products, the one with heat and the one without heat in exactly the same way, and I am asking you if you can tell any difference between the products? *A.* At what time do you want me to tell?

X-Q. 268. At any time. *A.* I can tell the difference in the working of the products.

X-Q. 269. All right, let us get down to brass tacks and find out where you can detect that difference. *A.* In the cutting and the forming.

X-Q. 270. Then do you say that there will be trouble in the forming? *A.* No. There would be a longer period of time. I don't get you, I don't understand you.

X-Q. 271. I have assumed, Mr. Ellis, that we are going to have the operator act exactly in the same way, do exactly the same forming operation, in exactly the same time interval, in the

case wherein your material was used without heat as where the material is used with heat. *A.* All right.

X-Q. 272. In exactly the same way. Will there be any difference in the products? *A.* In the final product, no.

X-Q. 273. Not in the final product? *A.* I don't think so.

X-Q. 274. Will there be any difference in the products immediately after the forming operation has taken place? *A.* Oh, I want to answer you right, but I don't think there is a noticeable difference in the finished innersole.

X-Q. 275. How can we tell whether these advantages exist or not that you tell about? *A.* I would not know how to tell you that.

X-Q. 276. I have here some insoles which I would like to show you at random, and I would like to know if you can tell whether those were made with heat or not.

Mr. Gates. I think that question has been answered. He has already said he could not tell from the finished insole.

The Court. Yes. I should presume very likely he could not at this late day. Perhaps if they had just come off the machine he might be able to tell.

Mr. Lyman. He has said he could not.

The Witness. I think I could tell.

The Court. If they had just come off?

The Witness. If they had just come off I think I would find a better grab in the one that was using the heated latex than the one that was using the cold.

X-Q. 277. You mean, the bond would be stronger? *A.* The bond, I think, at that time would be stronger.

X-Q. 278. How would you test the strength of that bond? *A.* Oh, there are means of doing it but I have not tested scientifically.

X-Q. 279. What means do you know of for testing the strength of the bond? *A.* Why, a pull.

X-Q. 280. A pull testing machine? *A.* A pull testing machine.

X-Q. 281. What kind of a pull testing machine is there? *A.*

There are different ones. I think the Boston Blacking Company has one.

X-Q. 282. A Scott tester, is it? *A.* I think it is. I know they have one.

X-Q. 283. When should that pull test be made,—right after the insoles come from the process, or should there be a delay to allow . set? *A.* Why, they should be made after they were rounded to get your difference.

X-Q. 284. After they were what? *A.* After they were trimmed.

X-Q. 285. Trimmed on the reinforcer, so-called? *A.* I should say so.

X-Q. 286. How long after that—does it make any difference whether your test is made immediately or after allowing some time for set to take place? *A.* Oh, I don't know

X-Q. 287. You say in the operation of your process this heated product of yours adheres very quickly, is that what you say? *A.* It does.

X-Q. 288. This heated top coat or the latex adhesive? *A.* It does.

Mr. Lyman. I think, your Honor, that that is all, but I would like to have the specimens produced this afternoon. I may have, in connection with those, something else to ask, but I think that is in general the cross examination, Mr. Gates.

Mr. Gates. We will have them in, Mr. Lyman.

The Witness. I have some of the duck at home, but I can get the latex. I have it here, I am quite sure. Four o'clock is a short while for 40 miles. I have to have the latex come in from Brockton.

Redirect Examination.

Q. 289 (by Mr. Gates). Can you have a man from the factory send it on? *A.* I will have him bring it up. I will call him.

Q. 290. He will get it up as soon as he can? *A.* Yes. I will have to go home to get the other.

Q. 291. I have had some experience with that name, gum tragacanth. *A.* Yes.

Q. 292. In your experience down in Whitman, with gum tragacanth. *A.* Yes.

Q. 293. You have described how you measured the viscosity of the gum tragacanth that way by a viscometer? *A.* Yes.

Q. 294. When you got the right figure you knew how much of the tragacanth? *A.* After I got the viscosity of it then I made only experimental batches and took it to the latex people.

Q. 295. What specifications did you give them? *A.* One minute and forty seconds.

Q. 296. That is, that the viscosity should have one minute and forty seconds? *A.* That is the time period.

Q. 297. For what? *A.* I presume it is 100 cc. but I won't say.

Q. 298. Did you use a standard? *A.* That is a standard viscosity.

Q. 299. You told the latex people you wanted that viscosity? A. Yes.

Q. 300. You suggested gum tragacanth? *A.* Yes.

Q. 301. What did they tell you? *A.* They said they had something just as good that was cheaper.

Q. 302. A substitute for gum tragacanth? *A.* I don't know what it is.

Q. 303. You don't know just what it is? *A.* I don't know.

Q. 304. In one case you put your hand on a bottle and kept the bottles on all the machines? *A.* This bottle here [indicating].

Q. 305. The water bottle? *A.* Yes.

Q. 306. Not the latex bottle, is that correct? *A.* That is correct.

Recross Examination.

X-Q. 307 (by Mr. Lyman). I would like to ask you to look at this Defendant's Exhibit C, this bill from the Clifton Manufacturing Company to Magic Tape Company for coated duck. I notice it says on the bottom H. B. Products. What does that mean? *A.* Well, I don't know. I didn't see it. These are bills

I asked Mr. Clifford over there to send in to me. H. B. Products—is that Magic Tape Company? There are some more here with H. B. Products Company on them.

X-Q. 308. Does it mean the coated duck that they had supplied to you here was the same as they supplied to the H. B. Products Company? *A.* Oh, no.

X-Q. 309. The same as they were supplying the H. B. Products Company? *A.* No. There were no entries for H. B. Products Company.

X-Q. 310. Does it mean you took them a sample of the H. B. Products Company coated web and told them to duplicate it? *A.* No.

X-Q. 311. You have no explanation why that H. B. Products name is on that bill? *A.* I have one other bill that has the same thing on it.

The Court. Couldn't it have been acquired from the H. B. Products Company?

The Witness. Wait a minute. The first ten bales of duck I coated for the Commonwealth was sent from the H. B. Products Company, to Clifton.

X-Q. 312. Have you any other bills for your latex invoices? *A.* Not here. I can get you the invoices.

X-Q. 313. When you get the samples of the other I would like to see what those invoices for the latex look like. *A.* All right.

Redirect Examination.

Q. 314 (by Mr. Gates). When you got the order from the Commonwealth Shoe and Leather Company did they tell you where to get the duck? *A.* No. They said they would send duck to me. They had H. B. deliver the duck over to them.

Q. 315. Over to the Clifton Manufacturing Company? *A.* Yes. I am very sure I am right on that.

Mr. Gates. That is all.

[Recess until 2 o'clock P.M.]

AFTERNOON SESSION.

ROYCE J. NOBLE (Sworn).

Direct Examination.

Q. 1 (by Mr. Gates). Dr. Noble, what is your full name? *A.* Royce J. Noble.

Q. 2. You live where? *A.* 21 Woodland Road, Malden.

Q. 3. By whom are you employed? *A.* I am a general consulting chemical engineer.

Q. 4. What degrees do you hold? *A.* I hold the degrees of B.S., M.S., and Ph.D.

Q. 5. From what institutions? *A.* From Boston University and from the University of Pittsburgh.

Q. 6. Your doctor's degree is from where? *A.* Pittsburgh.

Q. 7. Do you belong to learned societies? *A.* I am a member of the American Chemical Society, a fellow of the American Institute of Chemists, a fellow of the Institution of the Rubber Industry of Great Britain, a member of the American Institute of Chemical Engineers.

Q. 8. Have you made more or less of a specialty of latex the last few years? *A.* That is so.

Q. 9. You are the author of a work on latex? *A.* That is right.

Q. 10. Do you act in a consulting capacity for the Firestone Company? *A.* That is right.

Q. 11. And for the Heveatex Corporation? *A.* Yes.

Q. 12. Have you read the patent in suit, Doctor? *A.* I have.

Q. 13. Will you please explain what you understand that patent to show? *A.* This patent, namely, to Ellis, is concerned with a method for the manufacture of insoles. In this process a duck is coated with a coating of rubber-like material, after which the coating is dried, and before being cut and applied in the shoe a second coat of rubber adhesive, namely, a rubber cement in solvent, is applied.

Mr. Lyman. You do not mean exactly that, Dr. Noble, do you?

The Witness After being cut a second coat of rubber adhesive is applied.

The Court. Is that cut into strips?

The Witness. No. I beg your pardon; that statement is in error. Before being used in the shoe a second coat of rubber cement is applied. As it appears from the specification, the principal improvement over the prior act, or, at least, one of the principal objects set forth in the specification, is to obtain quick drying of the adhesive coat, that is, the second coat, and in order to obtain that this first coating of rubber material is applied to the fabric. With this first coating in place the second coating undergoes quick drying because of two reasons. The first is the fact, of course, that the solvent employed in the cement is a high grade naphtha—that is to say, a low boiling point naphtha—which evaporates rapidly and quickly to leave the rubber in a tacky stage, but in order to greatly speed up the drying that could naturally be expected of the rubber cement a certain amount of the solvent is, you might say, absorbed or taken up in some way by the base coating, so that in effect there is much less solvent to evaporate in order to reach the tacky stage than would otherwise be the case. As a result of this procedure the patent offers certain advantages, perhaps the most important one being the making possible of a greater speed of production than would be possible either using the cold solvent or cold cement, or the cold process method that had been used just prior to this, or with the use of the still older hot process method.

Q. 14. Have you finished, Doctor? *A.*. One other feature of this patent is that it clearly distinguishes from the old hot process just referred to in that repeatedly throughout the specification and the claims the operation is described as being done at room temperature. Of course the process using rubber cement prior to the development of this process also might have been operated at room temperatures, but the speed of operation, as has been pointed out, would have been much slower. I think that is all.

Q. 15. What do you understand the expression "room tem-

perature" to mean, when it is said that a certain step in the process is done at room temperature? *A.* Well, certainly there is no precise definition of room temperature, but ordinarily it would mean what it says, that is, the temperature of the room at the time and place in reference, as distinguished from the temperature that might be noted at that same time and place if heating was artificially used.

Q. 16. And if the temperature of the atmosphere on a certain day is 60 degrees Fahrenheit, and the material used in the process is heated to 90, let us say, would you say that the material so heated was at room temperature? *A.* Certainly not. It is materially above room temperature.

Q. 17. Now, you have described the cold process of using rubber cement prior to the patent in suit. That is described in the patent, is it not? *A.* It is.

Q 18. What is that process, briefly, referring to the patent? *A.* The use of the cold process, so-called, is referred to on the first page of the printed patent, the second column, line 59, and in that the cold process is described as being one in which a strip of duck is drawn through a cement-applying device in which a single coating of ordinary fluid rubber cement is applied. That rubber cement so applied must be allowed to dry to a considerable degree before it has developed its maximum tacky condition. If, however, that is completely dried out, it becomes essentially dry and nontacky. Then for use in the shoe a second coat of cement must be applied, and this is really the adhesive coat, the objection, of course, being that the proper time to apply it to a shoe to get most rapid adhesion is dependent upon the judgment of the operator.

Q. 19. In your opinion would there be any more secure adhesion in the ultimate product, using the old cold cement process referred to in the patent, or the new, improved cold process described in the patent? *A.* I know of no reason why the final bond should be better in one case than in the other.

Q. 20. Then what would you say the chief advantage of the

patented cold process was over the early cold process, both using rubber cement? *A.* It would appear to me that the principal advantage would be the speed of operation in the shoe factory which it makes possible.

Q. 21. The kind of operation which you have heard the witnesses for the defendant describe this morning? *A.* Yes.

Q. 22. Have you observed the Magic Tape Company's machines and materials anywhere? *A.* I have.

Q. 23. Where? *A.* I have observed the operation in production at the Diamond Shoe factory in Brockton.

Q. 24. When was that, Doctor? *A.* Approximately a week ago. To be exact, a week ago yesterday, I believe.

Q. 25. About how long were you there? *A.* Oh, I think I was there approximately an hour.

Q. 26. Do you have in your possession for the purposes of experiment a Magic machine? *A.* Yes.

Q. 27. A Magic precoated duck and top coat? *A.* That is correct.

Q. 28. Have you performed the process of sticking gem duck to insoles with the latex both hot and cold? *A.* Yes.

Q. 29. Now will you tell just what you have done, please, Doctor? *A.* In the first place, I have two of these machines. One is an older type—just how old I don't know. The rated heating unit was 60 watts, a 60-watt machine. I simply made a test with that machine, filling the water tank and latex tank in the usual way, and as near as possible to those conditions that I had seen in the shoe factory. On this particular machine I simply let it run to observe the temperatures developed in the latex compartment. The room temperature at the time was 76 degrees, and in a period of approximately 40 minutes the temperature of the latex had risen to 115 degrees Fahrenheit. With continued operation the temperature came up to 118 degrees. With another machine, which I presume to be a later model than the one first referred to, it was rated at 150 watts. This machine was operated over a period of a few hours not only to determine how latex

temperatures developed, but also to determine what effect the low water level in the machine, such as might possibly happen late in the day at a shoe factory under normal operation, the room temperature in this case was 75 degrees Fahrenheit, and I might also mention from time to time the roller on this machine was turned to stir the latex, probably not to the extent that it would naturally undergo in operation, but in any case to effect some stirring of the latex. Under those conditions the temperature of the machine under observation came up in one hour, or came up in half an hour to 125 degrees Fahrenheit, and in one hour to 146 degrees.

Q. 30. For the water or the latex, Doctor? *A.* For the latex.

Q. 31. Did you at any time experiment and make observations with respect to the behavior of the heated and the cold latex when applied to a leather insole? *A.* I did.

Q. 32. What were those observations? *A.* I made observations as to the period, as nearly as could be determined, at which the coated duck would retain a sufficient degree of tackiness to become bonded to the insole.

Q. 33. Can you use this to illustrate what you did, Doctor [handing insole to witness]? Will that help any? *A.* Yes. Because the speeds in drying—talking about at this point such as to preclude using any testing machine—it was necessary to devise a purely arbitrary test for the purpose of comparison, that is to say, an effort was made to determine just how long a time was required after the duck has been coated in this machine before it is in a condition to adhere properly to the leather insole. Now, as a measure of that time, I simply took the time as nearly as could be determined at which the adhesive was sufficient for laying the duck into the insole, the time at which the adhesive was sufficient to support the sole of its own weight. Now, when the web coated duck is first laid in, that is, operating at room temperature, naturally, no drying having taken place, there is no bond at all, and the sole immediately drops off.

The Court. Do I understand that was your experiment?

The Witness. Yes.

The Court. Operating at room temperature?

The Witness. Yes, sir. I attempted to experiment both at room temperature and the other.

The Court. You say there was no adhesive quality at all at room temperature?

The Witness. Yes, sir, immediately.

The Court. After a space of time there was?

The Witness. Yes.

The Court. Did you determine that?

The Witness. Yes, I did. Now, as for the results obtained, using one of the present compounds of the Magic Tape Company and applying the compound on such a machine as this at room temperature to the duck, and determining as near as possible by this test, we found that in approximately one minute—the times would vary slightly from test to test—but approximately one minute is required for that web duck, after being laid into the sole and just one pass made around the edge to lay it in, not attempting to be a shoemaker—

Mr. Lyman. Just a moment. Just finish the sentence. Approximately one minute was required for what?

The Witness. For this coated duck to reach a stiff adhesion or bond to the sole such that it would not drop off of its own weight. That is to say, when lifted up, of course. But on heating this latex to 115 degrees, that is, heating by raising the temperature of water in the usual way and applying the latex to the duck in the same way and making the tests in the same way, the time required to reach the same condition of bond varied between one-quarter and one-half a minute, and on raising the temperature to 150 degrees Fahrenheit, the temperature of the latex as referred to here, the time required was—with running the tool around—up to about one-quarter of a minute.

Q. 34. What compound did you use in these tests, Doctor? Do you recall? Do you know the number? *A.* It is referred to as Compound No. 2. Actually, I believe the number under which it is sold is 219, or something of that sort.

Q. 35. Did you test any other material of the defendant in the way you have just described? A. Yes, I did.

Q. 36. Will you give the procedure and the result? A. I tested another type of compound supplied by the defendant.

Q. 37. These are the defendant's material, are they? A. Yes —and applied it in the same way.

Mr. Lyman. How do you know this was the defendant's material, Doctor?

The Witness. I know to this extent only, that it was supplied to me by the defendant with the statement that it was his material.

Mr. Lyman. I don't think that is proof. How do you know that the material as to which you previously testified was the material that the defendant uses now?

The Witness. May I also add that the container in which it was supplied was supplied also carrying his label.

Mr. Lyman. What label?

The Witness. The Magic Tape Company label.

Mr. Lyman. I don't want to be captious, but I don't think that is any evidence as to what the material was that the defendant used.

Mr. Gates. This shows, and when we get through with the witness we will put on Mr. Ellis and ask him what material was supplied.

The Court. What about this first test we have already had? Was that something you found in the machine that was working down there in the factory?

The Witness. No, both of these materials, the compound which I have described here and the one just referred to which I have not described, were both supplied to me by the defendant.

The Court. Subject to proof that is the one he has commercially used?

Mr. Gates. Yes, your Honor.

Mr. Lyman. Let us here get a description of what this second compound purports to have been, please.

The Court. Go ahead with your test. You will have a chance to cross examine.

The Witness. Both compounds were supplied to me as being materials which were or had been used with this machine for its intended purpose.

The Court. Go ahead with the test. Let us have your test, your results.

The Witness. The second compound in a coat, applied in a coat and the test carried on in exactly the same manner, gave a drying time of one to one and one-quarter minutes when applied at room temperature. When applied on this second test at 114 degrees Fahrenheit, the time was estimated by this test to be one-half to three-quarters, and when applied at 160 degrees Fahrenheit it was approximately one-quarter of a minute.

Q. 38. Did you conduct any other experiment, Doctor, that would enable you to say or to give a reason for this superior, quicker stickiness on the heated over the unheated latex supplied to you, quicker stick on the heated over the unheated? *A.* In working with the two machines and the two compounds supplied, it seemed to me that the difference in behavior was simply one of the rate of evaporation of the liquid material which in this case is relatively high boiling compared with the solvent used in other cements, and because of this rapid evaporation the coating of the duck reached a point more quickly at which it was sufficiently tacky to bond itself and to be bonded under the conditions on operation of the insole.

Q. 39. And did you conduct any experiments on the relative speed of drying other than what you have testified to on evaporation? *A.* I made tests with both compounds, applying a coating to the duck, allowing it to dry in the web that was spread on the laboratory bench and for the purpose of comparison more or less arbitrarily taking the time of drying as we had, at which the coating became transparent—in other words relatively drying the water, this condition of drying, of course, is not the same as used in a shoe factory but is simply used as a method of comparing the

drying rates of the compounds when applied to the duck at different temperatures. The compound first referred to in the previous test, when applied cold to the duck, and as the result of numerous tests made to get an average drying time, the average drying time was found to be six minutes when applied cold. When applied hot, that is to say, at 115 degrees Fahrenheit, the average time was approximately five minutes, and when applied at 150 degrees the time observed was four minutes. Similar tests were also made with the second compound referred to in the previous test, and I might mention that this compound is relatively higher in viscosity. It evidently had a thickening agency in it. The drying time at room temperature, at 114 degrees Fahrenheit and at 160 degrees Fahrenheit, were 11, 8 and 7 minutes respectively. That is, that particular compound under the conditions of the test dried more slowly than the other ones.

The Court. Have you applied the compound to the web with or without the machine?

The Witness. With the machine.

The Court. Was the web pretreated?

The Witness. Yes.

The Court. Is there anything in that that helps the drying?

The Witness. No.

Q. 40. Doctor, could you compare latex and ordinary rubber cement, a solution of rubber in solvent, as to the length of time of the tacky stage, as to which remains tackier than the other? *A.* Well, that would depend somewhat on the latex compound. It has been my own experience that the latex compound after reaching the tacky condition will hold that for a considerably greater period than will the ordinary rubber cement. That is to say, rubber cut in the usual solvent.

Q. 41. Now, in the material that you tested which you saw being used at the factory, that you saw in Brockton, were they getting quicker bite or grab, and to what did you attribute that quick bite or grab with the materials you tested provided by the defendant? *A.* Speaking in view of the tests which I have made,

I am sure that the speed with which they were able to obtain the initial bond to the insole was due to the temperature, and consequently the speed of the evaporation, of the latex compound with which they were working.

Q. 42. Are there other ways of treating latex to get a grab or bite just as quickly? *A.* Well, I have no data to compare it with at the moment, but there are other ways than heating latex to make it set quicker when spread as an adhesive film, namely, subjecting the latex to some destabilizing treatment.

Q. 43. Would that treatment be effective in the machine which you have before you, in the process as you saw it performed? *A.* I have not tried it, but it is unlikely, because most latices so treated are especially sensitive to heat, and it is doubtful whether they could be maintained in this container at the temperatures at which it is used.

Q. 44. There are certain materials, such as glue, that are added to latex to render them adhesive—isn't that the fact? *A.* It is true.

Q. 45. Will they give as quick a tack as you observed in your experiments on this material, and as quick a bite as you saw in the factory at Brockton, in these adhesives? *A.* No latex adhesive which I ever saw containing glue or similar materials to effect quick tack would reach a period or condition of tackiness as quickly as is obtained under the working conditions in the shoe factory.

Q. 46. And as you obtained in your experiment? *A.* Or as I obtained.

Q. 47. Now, there has been some reference to gum tragacanth What is the purpose of that material—do you know? *A.* It is quite generally used both as a creaming agent on the rubber plantation and also used as a thickening agent on ordinary latex compounds.

Q. 48. Does it have any effect as an adhesive? *A.* None that I know of.

Q. 49. What is gum tragacanth? *A.* It is a vegetable matter.

Q. 50. Are there any other materials that are sometimes used as

substitutes for gum tragacanth for the intended purposes? *A.* Yes, there are vegetable gums of a similar nature.

Q. 51. Are any of them adhesive? *A.* None that I know of.

Q. 52. Do they make a latex to which they have added adhesive? *A.* Not adhesive in this sense. They might possibly develop some slight bond against the fabric after drying, but not quick tack.

Q. 53. You have described one way of getting a quick tack by destabilizing latex, which would not work in this machine. Is there any other way of treating latex so that it has a quick tack in the cold? *A.* Yes, there are other methods.

Q. 54. What is the most common one, as far as you know? *A.* Well, other than destabilizing latex in some way, the use of rubber solvent emulsified in the latex as one of the compounding ingredients has also been used to effect more rapid tack in the latex film.

Q. 55. Is that one of those rubber solvents to which you have referred? *A.* Yes.

Mr. Gates. If your Honor please, I will offer some formal exhibits. I offer in evidence the file wrapper and contents of the patent in suit as Defendant's Exhibit D.

[File wrapper and contents of Ellis Patent are marked as "Defendant's Exhibit D".]

Mr. Gates. Then as Defendant's Exhibit E, I offer a book of prior art patents. Mr. Lyman, two of the Thoma patents are not in here. May we put them in later when we get them? They have been ordered from the Patent Office, and ordered some time ago. With your Honor's permission and Mr. Lyman's I will do that.

Mr. Lyman. That is all right, Mr. Gates. They are the ones we have mentioned in the stipulation.

Mr. Gates. Yes, we mentioned them. Then there was one other patent which was not mentioned in the stipulation, which we would like to refer to in a general way, although it is in the answer. What we did, if your Honor please, was to cut out the

things from the answer that were not really going to be talked about, and we came down to what we thought were the most pertinent things. Mr. Lyman, out of that list we omitted a patent which is set up in the answer, which I would like to refer to.

Mr. Lyman. Would you tell me which one it is?

Mr. Gates. That is the Hancock and Silver.

Mr. Lyman. What is the number of it?

Mr. Gates. 3,110 of 1864.

Mr. Lyman. We have not got that.

Mr. Gates. Isn't that in the answer?

Mr. Lyman. No.

Mr. Gates. We are only using it as prior art, your Honor, any way.

Mr. Lyman. Naturally you are only using it as prior art. You are making no attack on validity.

Mr. Gates. Not at all. We are not saying a word about it. It has been admitted by us.

Mr. Lyman. We might have to look this over, your Honor, but I shall not make any objection to it being used.

Mr. Gates. This book of patents I offer in evidence as Defendant's Exhibit E.

[Book of prior art patents is marked as "Defendant's Exhibit E".]

Mr. Gates. I will hand that book to your Honor, if you care to follow the witness. He will explain about three or four patents, not all of them by any means. And we are going to make the explanation very short.

Q. 56. Doctor, would you turn to the Hopkinson patents and tell us what you understand they show—1,657,472 and 1,808,225? *A.* These two patents deal with certain latex adhesive compositions, and their use in bonding together surfaces. In patent 1,657,472, the first page, line 48, describes this latex adhesive as a means for cementing leather surfaces, and it is particularly stated that two coats are used, that is to say, it is a two-coat process, the first or priming coat being applied to the leather surface, and then

a second coat is applied. He also points out in the same patent, on page 2, lines 74 to 76, that "It will further be understood that the surfaces of various materials other than leather may be bonded together" in a similar manner. The other patent, namely, 1,808,225, deals with the composition itself and describes a similar method of applying.

Q. 57. What do you understand the function of the priming or surfacing precoat to be as shown in those two patents? *A.* As with any fibrous or woven material, there is also a certain degree of porosity, such that a coat of liquid will tend to penetrate into the body of the material,—that is, under the surface of it, so that if one coat only is applied a certain amount of the material is, for the purpose of adhesion, at least, lost, in that it has penetrated into the leather and is no longer available on the surface. It may assist in the bond, but it is no longer active in bonding the surface of the material to the other material to which it is to be joined, such as fabric or another piece of leather. Consequently a second coat is desirable in order to serve as the real adhesive agent.

Q. 58. Now will you turn to British Patent 269,224 and tell us what you understand that patent to show? *A.* This is similar in many ways to the Hopkinson patent just described, except that Davis is operating, at least for the first coat, with a solution of India rubber, as he phrases it, and over this—that is, for the adhesive coat proper—he is using a latex, the latex being sprayed upon the layer of India rubber. The function of the two coats—that is, one to give really a base coat for the other—is similar to that described in the Hopkinson patent.

Q. 59. In the Davis patent the base coat is a rubber cement and the top coat is a latex? *A.* That is correct.

Q. 60. Now will you turn to the Thoma United States Patent 812,384, and tell us what you understand that patent to show? *A.* This patent is concerned with a method of reinforcing insoles, and describes one method of practicing the hot process previously referred to in this case. In other words, a sticky material, rubber

or other materials which he uses, is applied to the fabric. But he also states that he applies one or more coatings. The base coating, as he states at page 1, line 94, "shall be tacky or sticky and capable of adhering strongly to the cotton". And on top of that he puts another coating, regarding which he says—this is page 2, line 7—"I rely mainly upon gutta percha for the normally nonsticky surfacing coating". That is the coating which becomes tacky when he applies heat.

Q. 61. Now will you turn to British Patent 277,375? Do you have that in your book?

Mr. Gates. That just came in from the Patent Office this morning, but it has been in the answer for a long time.

Q. 62. Do you have British Patent 15,649? I guess those were two that were late in coming in, Doctor. I hand you the Hancock and Silver Patent, 3,110, of 1864. Would you very briefly describe what that patent shows? *A.* Well, it shows a great many things, it covers a very wide field. It is concerned principally with methods of compounding and using latex,—that is, latex not only of the ordinary rubber tree but the Balata latex, either one of those alone or in combination, and various methods are described for forming sheets or layers or blocks of material compounded with fibrous substances, which they mention, like paper, and so on, and molding those in shapes, and, as I say, for various purposes and he also describes methods of compounding.

Q. 63. What one characteristic of latex do they employ there in making these articles you have just described? *A.* Well, it is of an adhesive nature in binding these various fibrous materials together.

Q. 64. So that this patent is an early showing, then, in your opinion, of the use of latex as an adhesive? *A.* Yes.

Mr. Gates. Your witness, Mr. Lyman.

Cross Examination.

X-Q. 65 (by Mr. Lyman). First you spoke of the Hopkinson patents, Doctor. Hopkinson shows first the coat of latex, then a coat of rubber in solution in a solvent on top of it, doesn't he? *A.* I think not. In 1,657,472, page 1, line 48, he says specifically: "The latex is allowed to soak into the leather surfaces and then a second coating is applied." The second coat presumably referring to the same territory.

X-Q. 66. Well, look, please, at what I was thinking of, at line 82:

> "If desired a coat of latex may be applied to surfaces of leather to be joined together and when the latex has penetrated the surfaces the coating of rubber cement may be applied and after the usual drying carried out when rubber cements are used, the two treated surfaces then joined together."

A. That is true.

X-Q. 67. He explains on the next page, doesn't he, that the period during which the latex remains tacky in drying is less than the period during which a rubber cement in a solvent remains tacky? *A.* I am not sure. I don't know whether he does or not. But I should beg to disagree with him if he did, because I think that depends on the particular—

X-Q. 68. Here is what he says:

> "It will be observed thus that the use of rubber cement here permits the application to each other of the surfaces to be bonded at any time after that period in the drying of the cement where stickiness appears, whereas in the case of latex such stickiness appears and remains for a shorter period."

Page 1, lines 90 to 97. That is what this patentee says. *A.* Yes, but he says, is the case here, in the particular thing that he is describing.

X-Q. 69. That is contrary to your testimony of a few moments ago, isn't it? A. That is contrary to my opinion.

X-Q. 70. To your opinion? A. Yes.

X-Q. 71. Where you said that latex in drying retains its tackiness longer than ordinary rubber cement? A. If I may make that clearer, I will say that I certainly think that that is usually the case. It is possible, however, to have conditions where it might be otherwise.

X-Q. 72. Hopkinson is a well known expert in this art, isn't he? A. He was.

X-Q. 73. He was while he was living? A. Yes.

X-Q. 74. With the United States Rubber Company? A. Yes.

X-Q. 75. Now, gum tragacanth, you say, is not an adhesive? A. Not in the sense that you are talking about here. It can be used as an adhesive just the same as Scotch flour can be used, but in both cases, when it has dried out its adhesive power is not strong. It might be such as to hold two pieces of paper together, as used for wallpaper or something of that sort, but when it is dry it is not an adhesive.

X-Q. 76. When it is dry it is not an adhesive? A. When it is dry, simply the material itself.

X-Q. 77. It is used in mucilage, isn't it? A. Under the conditions which I stated. Let me put it this way: It certainly would add nothing to the adhesive power of the latex, or the latex composition.

X-Q. 78. Well, it is classified as an adhesive, isn't it, Doctor? A. Yes.

X-Q. 79. I have some textbooks here that I could show you which classify— A. Yes, it certainly is used as an adhesive material, but it would not increase the bond of a latex film under the conditions we are talking about here.

X-Q. 89. Where were these experiments made which you testified to, in which you undertook to determine the time it took various materials to dry? Where were they carried out? A. In my own laboratory.

X-Q. 81. Where is your laboratory? A. At my office at home, at the address which I have given.

X-Q. 82. When were they made? A. Oh, within the last week. I think they were begun on—just a moment. [Referring to volume.] The first were begun on the 30th of September.

X-Q. 83. When were they finished? A. Last Monday, which would be October 2.

X-Q. 84. In those experiments you conducted tests at, first, room temperatures, and second at 115 degrees temperature, and then at 150 degrees temperature on these products. Did you test at any intermediate values? A. No.

X-Q. 85. Just at those three particular temperatures? A. That is right.

X-Q. 86. What was the room temperature at which those tests were conducted? A. I think that was given. All the drying tests were conducted at either 74 or 75 degrees Fahrenheit.

X-Q. 87. And the only place where you have seen the defendant's machine in operation is at the Diamond Shoe Company? A. That is correct.

X-Q. 88. You saw it there one day? A. Yes.

X-Q. 89. You were there about an hour? A. About an hour.

X-Q. 90. What was that day? A. That would be the 26th of September.

X-Q. 91. And the only tests you made there were to take two machines, as I recall it, and experiment to see how long it would take the heating element to bring the cement, water, or latex up to a certain temperature? A. I did no tests whatever. I simply made observations there to see what they were doing, how they operated, and so on.

X-Q. 92. Where was this experiment conducted in which you took two of the Magic Tape Company's machines, one the old style and one the present style, and experimented to determine the effect of the heating unit, as to how long it took to raise the latex to a certain temperature? A. In my laboratory.

X-Q. 93. Your own laboratory? A. Yes.

X-Q. 94. You had in the machines their latex, did you? A. I had.

X-Q. 95. The defendant's products? A. That is right.

X-Q. 96. And the temperatures that you observed were temperatures of the latex rather than temperatures of the water bath, were they? A. Yes.

X-Q. 97. At the Diamond Shoe Company's factory, what was the date you were there? A. The date was a week ago yesterday, which I believe would be the 26th of September.

X-Q. 98. Who was there with you? A. Mr. Ellis, Mr. Hodder, Mr. Hawley, and I believe that is all.

X-Q. 99. Did you observe the temperature of the latex in the Diamond Shoe Company's machine at that date? A. Yes, I did.

X-Q. 100. What was it? A. 115.

X-Q. 101. Did you observe the temperature of the roll in the defendant's machine at that date? A. No, I did not.

X-Q. 102. Did you undertake to make any measurement at any time to determine what the temperature is of the latex at the moment of its application to the duck as distinguished from the temperature of the latex in the bath of the machine? A. No, I did not.

X-Q. 103. When latex is in its uncoagulated form it is not sticky? You put your hand into it without it sticking, or your finger into it? A. That is correct.

X-Q. 104. What makes it become sticky as it dries? A. The latex composition in general drying, in evaporating, loses water and you obtain the rubber substance which in itself is sticky, and you don't get the tack until your evaporation has taken place to that extent.

X-Q. 105. Drying out the water leaves the rubber which itself is sticky and adhesive? A. That is right.

X-Q. 106. When a rubber cement, made with a solvent for the rubber such as hydrocarbon, dries out, what causes that material to become sticky? A. Likewise the removal of the substance in the solvent leaves the rubber, which in itself is sticky. The rub-

ber, however, in that case is in a somewhat different condition than the rubber from the latex, but both are sticky.

X-Q. 107. It has been swollen, a lot of the particles by the solvent hydrocarbon? *A.* Yes.

X-Q. 108. As a matter of fact, it is in what is known as rubber cement that rubber in hydrocarbon is really in colloidal dispersion rather than a solution? *A.* Yes.

X-Q. 109. Just as rubber in latex is in a sense a colloidal dispersion? *A.* Not in the same sense. Both are colloidal systems, if you are going to put it that way.

X-Q. 110. In both cases the rubber particles are in a state of suspension, in a liquid medium? *A.* In the case of latex the rubber particles are most certainly in a state of suspension, a condition of Brownian movement, so-called, as the particles are in motion, which could be observed, but such is hardly the case in the solvent. There is a difference, but I think both would be classified as colloidal.

X-Q. 111. They are both rubber adhesives? *A.* Yes.

X-Q. 112. They have been recognized as such for a good many years? *A.* Yes.

X-Q. 113. Treated as equivalents?

Mr. Gates. For what purpose, your Honor?

A. In some cases, certainly, but not for all purposes at all times.

X-Q. 114. Let me be clear about the procedure that you adopted in running these experiments in your laboratory to which you testified. The first set of experiments, as I understand it, you measured the time after the application of the latex to the duck, as best you could, measured the time that elapsed from the time of application of the latex to the duck until the bond between this duck and the insole was strong enough so you could lift the insole by taking hold of the duck? *A.* That is not quite the case, Mr. Lyman, because that is what obviously was impossible to do, anything of that sort.

X-Q. 115. Let us see, now, what you did. *A.* In order to make some test that would approximate the conditions of use, a test

was made and the duck was coated in the manner described, cut off, laid into the insole—in a crude enough manner, not being accustomed to it—but in any case laid in as rapidly as possible and then the time for laying that in there, this time being measured there when this operation was finished, and it had at that time sufficient bond to hold this, not necessarily completely stuck but a perfect bond.

X-Q. 116. So you could lift up the—when you lifted up the duck the sole would come up with it? *A.* That is right. That is a perfectly arbitrary test, to be sure, but some method of measuring the time at which bond had started to form or develop.

X-Q. 117. Now, in the second set of tests that you testified to, you put on the material and waited until it became transparent? *A.* Yes. The duck was coated in the same manner, the strip drawn up, cut and laid on the laboratory bench, and the time measured from that moment until the coating, latex coating put on it. You notice this is somewhat orange color. A clear latex compound was applied, and that is, of course, white. An arbitrary time was taken for the complete bond. It had just got about as transparent as this is.

The Court. The leather became dry?

The Witness. It really became essentially dry but perhaps not completely so.

X-Q. 118. I suppose you don't know anything about how many shoes or insoles may be treated with one gallon of the defendant's material? *A.* I haven't the slightest idea.

X-Q. 119. You don't know anything about the procedures in shoe factories? *A.* No.

X-Q. 120. You have undertaken to describe the term "room temperature" as used in the patent. What that really means is that the process is one that does not require any added temperature, isn't it, Doctor? Did you read that patent [handing patent to witness]? *A.* You are referring to the patent—

X-Q. 121. The Ellis patent. *A.* Yes, I take it that the process may be carried out without the application of any heat.

X-Q. 122. You would not say that a process in which some heat was added which didn't materially affect the operation was excluded from the term "room temperature" merely because of that fact, would you? A. I would say regardless of whether it had any affect or not if it was heated to a point above the surrounding room temperature then it was no longer at room temperature.

X-Q. 123. One degree Fahrenheit? A. I would say that—well, you cannot set any limit, but your room variations may well be within one degree.

X-Q. 124. Room variations are a great deal more than one degree? A. Actually they may be more than that, depending upon the various conditions, but if a building is heated in the usual manner I shouldn't imagine it would vary a great deal more than five degrees.

X-Q. 125. You perhaps haven't had much experience in shoe factories. I will withdraw that question. We will drop that subject. The court and the rest of us know as much about that as you do.

Mr. Lyman. If we could adjourn for five minutes, if your Honor please, I would like to consult with my colleagues.

The Court. We will take a five minutes recess.

[Short recess.]

X-Q. 126 (by Mr. Lyman). Doctor, I have two or three more questions. When you were conducting your experiments to see how long it took to bring the latex up to certain temperatures with defendant's heating unit, there was no commercial operation of these machines? That is, no operator was withdrawing the latex to put on shoes, was he? A. No, that is true. If I may add—I will repeat what I said in connection with that. I did have the roller turning.

X-Q. 127. That is merely to stir up the latex? A. To effect agitation, that is all.

X-Q. 128. Now, these tests that you made with reference to drying time of material at different degrees of heat simply show

that the water evaporates from the material at a more rapid rate if the latex is hot than if it is cold? *A.* Yes.

X-Q. 129. And they have no relation further than that on the question of whether the material operates in the factory in a different or more advantageous way warm than cold? *A.* I should put it this way: They have no direct relation to the machine operation because they were done simply on pieces of duck and dried at room temperature.

X-Q. 130. Have you examined the precoat, dried coat that appears upon these fabrics which are used in this operation? *A.* Not to make any examination of them.

X-Q. 131. They are porous, aren't they? *A.* They appear to be—no, the rubber coating does not appear to be porous. The fabric is quite porous so you can hold it up to the light and you can see the threads, but the coating itself does not appear to be porous.

X-Q. 132. Does it appear it would be to some extent porous? Will you look at it, please, the specimen that is on his Honor's desk? *A.* I think it could be better described that instead of porous it is a very thin coating which runs down into the fabric.

X-Q. 133. That would not, however, form a continuous film over the fabric? *A.* I couldn't say, because it would take a little more examination than merely looking at it to say whether the coating is continuous or not.

Mr. Lyman. I understand there is going to be more evidence as to the nature of the materials that were used in these experiments, your Honor. That is all, Doctor.

Mr. Gates. That is all, Doctor.

ELMER A. ELLIS, *Recalled.*

Redirect Examination.

Q. 316 (by Mr Gates). You heard the Doctor's testimony? *A.* I did.

Q. 317. What did you deliver to him for the purpose of the test? *A.* I delivered to him my rubber latex and duck just as we ship it to the customers.

Q. 318. With your formulae? *A.* Yes.

Q. 319. You have two? *A.* We have two.

Q. 320. And each was as you stated? *A.* Each was as I stated.

Q. 321. For the top coat? *A.* They were for the top coat.

Q. 322. What about the precoat fabric? *A.* The same as we sent out in the test, coatings, smoke sheets and R.P.A.

Recross Examination.

X-Q. 323 (by Mr. Lyman). Did you yet obtain those specimens? *A.* Yes, sir.

Mr. Lyman. The witness produces two gallon cans, one of them marked No. 1 and the other marked No. D-219, also a roll of the precoated duck. I offer in evidence as Plaintiff's Exhibit 16 the can marked No. 1.

[Gallon can produced by witness marked No. 1, is marked "Plaintiff's Exhibit No. 16".

[Gallon can produced by witness marked D-219, is marked "Plaintiff's Exhibit No. 15".

[Roll of precoated duck produced by witness is marked "Plaintiff's Exhibit No. 17".]

The Court. What are the labels on the can?

[Mr. Lyman shows cans to the court.]

The Court. Is this something you put up yourself, or do you buy it?

The Witness. I buy it in drums and put it into cans.

The Court. You don't treat it?

The Witness. No, sir.

The Court. That is just as you got it?

The Witness. Yes, sir.

X-Q. 324. Which of these formulae is the more viscous, Mr Ellis? *A.* No 1.

X-Q. 325. That is what you got from Heveatex Company? *A.* Yes.

X-Q. 326. No. 219 is what you got from the Vultex Company? *A.* Yes.

X-Q. 327. Did you find any of the invoices from either of those companies? *A.* No. I neglected to get them.

X-Q. 328. By the way, do you know enough about the shoe factory practice to know what is desired in connection with this bond between the duck and the leather?

Mr. Gates. I object. This is beyond the scope of direct, on the recall, if your Honor please.

The Court. We don't have to follow that if we don't want to.

Mr. Gates. You don't have to, but if we ever hope for this lawsuit to come to an end.

The Court. I think I might invoke it unless I think you have a really helpful idea.

The Witness. Will you give me your question again?

X-Q. 329. What I started to ask, Mr. Ellis, was whether you know enough about shoe factory practice to know what is desired in connection with the bond between the fabric and the leather of the insole whether it is something that is going to last indefinitely or whether all that is required is something that will hold the parts together during shoe manufacturing operation? *A.* I do.

X-Q. 330. What is your answer to that? *A.* The answer is that has never been obtained. They would like a bond that would hold on there so you couldn't pull the duck off, but there has never been one made yet. The idea of the duck is to reinforce the leather.

X-Q. 331. As a permanent thing? *A.* As a permanent thing.

X-Q. 332. One further question. You mentioned a Mr. Clifford told you, on your direct examination, as having provided you with certain bills. That wasn't the Mr. Clifford of the B. B. Chemical Company? *A.* No, but the same name. Mr. James D. Clifford of the Steadfast Rubber Company.

Mr. Lyman. That is all.

Mr. Gates. If your Honor please, if I may have from Mr. Lyman the formula of his material then I am through.

Mr. Lyman. I have the formulae here, your Honor, for all these materials, all our formulae, but as my brother knows and as I

have stated before, and as he has agreed, these are supposed to be and are kept as trade secrets. I don't want to go to the extent of refusing any pertinent information to the defendant, and I am going to show this formula to him right now, and I shall hope we can keep that out of the record and we can agree with reference to it.

Mr. Gates. I hope so.

[Mr. Lyman shows paper to Mr. Gates and the expert.]

Mr. Lyman. The formulae used by the plaintiff have now been disclosed to counsel and the expert for the defendant, and by agreement we will put upon the record so much only of the formulae as they ask to have put on. As to the Bostik materials—

Mr. Gates. I don't think we want that.

Mr. Lyman. I had rather put that on since you want the other ones.

Mr. Gates. All right.

Mr. Lyman. The Bostik materials, base coating consists of smoked sheets—rubber, crude rubber, zinc oxide, Burgundy pitch and naphtha. The same is true as to the Bostik top coating, although the proportions of these materials are not the same. As to the Gold Top base coating, this includes a certain percentage of 60 per cent concentrated rubber latex, about 30 per cent of naphthol mineral spirits, which I understand is a high fraction of naphtha, naphthol mineral spirits and certain other ingredients.

Mr. Gates. Wouldn't it be better to give roughly the percentage of them,—roughly, this percentage?

Mr. Lyman. The total of rubber solids in the material was about 35 per cent of the whole, and the total amount of naphthol mineral spirits is about 30 per cent of the whole. As to the Gold Top top coat, the list also includes naphthol mineral spirits, gutta percha resin, as well as other materials. The rubber content is about 35 per cent of the whole; the naphthol mineral spirits about 24 per cent, and the gutta percha resin about eight per cent.

Mr. Gates. Have you got the formula for this?

Mr. Lyman. That is No. 12?

Mr. Gates. Yes.

Mr. Lyman. Yes. The formula, No. 12 top coating, includes about 46 per cent of rubber solids and 10 per cent of rosin oil, as well as other materials.

Mr. Gates. The defendants rest, if your Honor please.

Rebuttal.

CHARLES CAMPBELL (Sworn).

Direct Examination.

Q. 1 (by Mr. Lyman). What is your name? *A.* Charles Campbell.

Q. 2. Where do you live? *A.* Augusta, Maine.

Q. 3. Your age? *A.* Forty-three.

Q. 4. You are employed by the E. E. Taylor Corporation? *A.* That is right.

Q. 5. You are assistant foreman of the insole department of that company, or foreman? *A.* I would say, assistant foreman of the sole leather room, in charge of the insole department.

Q. 6. Now, the E. E. Taylor Corporation has been mentioned in the evidence as one of the companies which are using the defendant Magic Tape Company's process and materials. You have two of their machines there? *A.* Yes.

Q. 7. You use their coated duck and their latex adhesive, or their adhesive, whatever it is that they supply? *A.* That is right.

Q. 8. Has that process ever been operated without heat in that factory? *A.* Yes.

Q. 9. For how long a period was it operated without heat? *A.* At varying lengths of time, at different periods. At one time it was operated without heat for a period of approximately two months. At another time it might have been for a few moments, and then again it might have been for two or three days.

Q. 10. The first time you deliberately shut off the heat for some reason, I believe? *A.* Yes, we did.

Q. 11. What was the reason why you turned off the heat? *A.*

When we first started using the machine, the latex compound was of a consistency that had a tendency to skim over under the influence of heat, unless it were kept in agitation all the time, and we were using at the time two different widths of duck, which meant that one width or the other would remain inactive for possibly ten or fifteen minutes at a time, and the roll would gum up, causing the operator a lot of difficulty and necessitating the cleaning of the roll at frequent periods—too frequent periods. So to overcome that we turned the heat off, and we of course did away with the skimming over and really enabled the operator to use the machine when otherwise she would have refused to use it.

Q. 12. What about the character of work that was done during the period that the heating unit was out of operation, as compared with the character of work that was done with the heating unit in operation? Was there any difference? *A.* Taking a general comparison, no. By a "general comparison", I mean a comparison of all the operators on the job, all the operators that were using the process at that time.

Q. 13. Now, after that process had been in operation for this relatively long period without the use of heat, Mr. Hawley came up, did he, and found it in operation without any heat? *A.* Yes.

Q. 14. What did he do about it? *A.* Well, he called another factory—or, possibly not called, but he obtained from another factory near there—

Mr. Gates. May I interrupt? Does he know this of his own personal knowledge?

The Court. I think so. He obtained from another factory what?

The Witness. He obtained from another factory near there a container of compound that was thinner, and we undertook to use that with the heat kept on all the time.

Q. 15. That worked all right with the heat on? *A.* I really couldn't say that it worked all right, but we used it.

Q. 16. Now, I think you said that at other periods than that rather prolonged period the operation has been conducted at your factory without any heat. *A.* That is right.

Q. 17. On defendant's process. What happened? What was the reason why it was conducted without heat in those other instances? *A.* Well, we have, as I have testified, two of these machines in the factory, and a short time ago—I don't know how long ago; just what time it was—both machines went dead—I will call it dead—and there was not any heat obtained from the element, and at that time I am of the opinion—I am not positive as to whether it was two days or three days, but I am positive that for at least one whole day there was no heat on either machine, and the trouble was eventually traced back, in the case of one machine, to the thermostat connected with the machine, and as regards the other machine I am not able to say just what the trouble was.

Q. 18. Did you take up with Mr. Hawley the question of what you were supposed to do in case the heating unit went out of commission? *A.* Why, of course it would be natural, my being in charge of the production in this factory, for me to be concerned over getting the work out, and also to remember that Mr. Hawley was 150 miles from me, or that the Magic Tape was, and I had been in the habit of doing things much nearer at home, and I think I did mention to Mr. Hawley, what would happen in case the machines went dead, with him in Brockton, possibly, and me in Augusta. And the answer I got was that about the only thing we could do was to keep on using them until such time as he could get up there and get them going properly.

The Court. But you did operate them then without heat?

The Witness. Yes, we did.

Q. 19. In your opinion, after your experience with these machines, does the use of heat do any good in the Magic Tape process? *A.* Speaking from fifteen years or more experience in the reinforcing of gem insoles, I could not say that it did a bit of good.

Q. 20. You couldn't say it did any good—is that what you say? *A.* No, not any good at all.

Mr. Lyman. That is all.

Cross Examination.

X-Q. 21 (by Mr. Gates). Mr. Campbell, the last time these machines were run without heat was for what reason? Do you recall? *A.* Didn't I just give the reason, or didn't I?

X-Q. 22. I am asking for it again, the last time. I am not sure I got it. *A.* As I said, both machines went dead.

X-Q. 23. Due to the heating unit—is that right? *A.* No. I didn't say that.

X-Q. 24. All right. What part went dead? *A.* According to my information, the trouble with one machine was contained in the thermostat, in here [indicating].

X-Q. 25. That was one of the troubles? *A.* That was one of the troubles. As to the other machine, I am not prepared to say whether the trouble was in this machine or whether it might have been in the electric supply coming to the machine.

X-Q. 26. Was the thermostat in the one machine that you know about fixed? *A.* I really couldn't say as to that, because the machine was taken back by Mr. Hawley and replaced by another machine.

X-Q. 27. Did the thermostat on that work? *A.* In the machine—

X-Q. 28. Which was replaced, the new machine that came back—was there a thermostat in that? *A.* I presume so.

X-Q. 29. Did it work? *A.* As far as I know.

X-Q. 30. Did you turn on the heat? *A.* Yes.

X-Q. 31. About how long was it before that new machine came back? *A.* I couldn't tell you exactly, but I would say this: That the E. E. Taylor Corporation put in a call to the Magic Tape Company, as I understand it—I am not sure as to the exact city, but I think Mr. Hawley was in Binghamton, New York, at that time, and he perhaps got home around 1 or 2 o'clock in the morning, or something like that, late at night, and got the call and came to Augusta, arriving there around 8 o'clock in the morn-

ing of the following day, which would mean that the machines had been down about twenty-four hours.

X-Q. 32. When was this? *A.* I am not sure; I can't tell you the exact date.

X-Q. 33. How long ago, about? *A.* Oh, I should say it was about—I really am not sure—two or three months ago.

X-Q. 34. Now, this other machine that for some reason or other broke down. Was that fixed? *A.* I am not saying that the machine broke down.

X-Q. 35. Something happened to it, so that the heat went down? *A.* Something happened so that it did not work.

X-Q. 36. Did the heat come back on again on that particular machine? *A.* I couldn't say, because Mr. Hawley took it back with him, and at a later date he told me that there was not anything wrong with the machine.

X-Q. 37. Did they give you a second machine to take its place? *A.* He did.

X-Q. 38. Did you turn the heat on that? *A.* Yes.

X-Q. 39. How long ago was that? *A.* The same time.

X-Q. 40. And you were then using those two machines with heat on for two or three months—is that right? *A.* Since then, yes.

X-Q. 41. Since then, up to now? *A.* That is correct. May I say this? That there has been, within the past week, a short period of time when one of those machines was used without heat.

X-Q. 42. How long? *A.* A matter of probably two and a half hours.

X-Q. 43. What was the matter with it? *A.* There was no matter with it at all. It was my own mistake.

X-Q. 44. Did you correct that mistake? *A.* I did, yes.

X-Q. 45. It is a mistake, then, to use this machine without heat, isn't it? *A.* No. That was a mistake.

X-Q. 46. And yet you have been using it for two or three months with the heat on—two months—that is right, isn't it—with the exceptions you have mentioned? *A.* That is right.

X-Q. 47. You have no more exceptions in the back of your mind? A. No.

X-Q. 48. Now let us get at this two months' period. You say that for two months this machine was run without heat. Is that right? A. In the beginning of our association with the Magic Tape, yes.

X-Q. 49. Now would you give me the dates as near as you can? A. Yes. I would say that it was in the latter part of 1938.

X-Q. 50. It was in the wintertime? A. No, the fall.

X-Q. 51. The latter part of 1938. And I understand that the reason was that you encountered some difficulty with the skimming, with scum formation—is that right? A. Yes.

X-Q. 52. On the roll and on the top of the machine. Did you take that matter up with your superior? A. Yes, sir.

X-Q. 53. With whom? A. My superior.

X-Q. 54. Which one? Give me the name. I would like to know who he is. Mr. Flowers? A. That is right.

X-Q. 55. What did Mr. Flowers tell you? Did he give you permission to run that machine without heat? A. He did. He certainly did.

X-Q. 56. Did he give permission to continue to run it without heat? A. Yes.

X-Q. 57. You had his permission to continue the running of it without heat for two months? A. Yes.

X-Q. 58. He knew about it? A. Yes, sir.

X-Q. 59. Is that right? A. He did.

X-Q. 60. He gave you the permission—is that right? A. Yes.

X-Q. 61. There is no question about it? A. No, there is not any question about it.

X-Q. 62. Now, there was some difference in these latices; one was thin and one was thick. Of these cements, let us call them, you are using today just one? A. The thin.

X-Q. 63. The thin? A. The No. 1.

X-Q. 64. You have been using that ever since you had this scum trouble? A. Not ever since, no. We had the compound that

was obtained from another factory, which was the Magic Tape's No. 45, which I would say might be about half way between the consistency of the original compound that we had and this No. 1.

X-Q. 65. How long have you been using this thin compound that you are using now, that you say ran out this 45 and the first stuff you got from Magic Tape? *A.* I would say we had been using it—oh, I would say all summer.

X-Q. 66. All summer? *A.* Yes.

X-Q. 67. How long were you using this 45 compound you spoke of? *A.* As I remember it, we only had 5 gallons of that, which would run us probably three or four days.

X-Q. 68. So that from the beginning of last summer, of 1939, or up to then, you had been using this thick latex, the one you first had trouble with—is that right? *A.* No.

X-Q. 69. I just want to get the dates straight. *A.* I will tell you the dates as closely as I can. Naturally I don't remember them exactly.

X-Q. 70. No, I don't expect you to. Just approximately. *A.* Oh, I should say that our use of the No. 1 would go back way beyond the summer. Probably it might go back into February.

X-Q. 71. Of 1939? *A.* Yes.

X-Q. 72. By No. 1, you mean the thinner stuff? *A.* Yes, I do. Which we are using now.

X-Q. 73. Now we have moved it back from the summer of 1939 to the fall of 1939. Now, that is right, is it? About February, 1939. Was this No. 1 the thin stuff that you are using today? *A.* Yes.

X-Q. 74. Then you used the thick stuff from sometime in the fall of 1938 until January, 1939—that is right, isn't it? *A.* That is my recollection.

X-Q. 75. Well, that is all, of course,—your approximate recollection. *A.* That is right. With the exception of the 5 gallons of 45.

X-Q. 76. With that exception, and that was only used for three or four days? *A.* That is right.

X-Q. 77. Or four or five days, or something like that? *A.* Yes.

X-Q. 78. During all this time you said you had this trouble with the thick latex, and that began when you first got the machine? *A.* From the beginning, yes.

X-Q. 79. From the beginning? *A.* Yes.

X-Q. 80. Now can you give me a little better recollection as to when you first put that in? *A.* Well, the best recollection I can give you would be that the machines were put into the factory around September of 1938, on trial.

X-Q. 81. During about September, October, and November you had this trouble of getting the scum formation? *A.* That would be my recollection.

The Court. I am staying on so that this man may get back to Maine.

Mr. Gates. I will continue just a little further.

X-Q. 82. So that for December and January you ran this thick stuff with the heat, didn't you? *A.* Yes.

X-Q. 83. Did you have any trouble with it? *A.* It is apparent that my recollection of the dates does not compare with what you have just told us, because we certainly never did run these machines with the thick latex and the heat combined for that length of time.

X-Q. 84. But you did run them with the thick latex and the heat, didn't you? *A.* The only time that we ever ran the machines with the thick latex and the heat was at the beginning, or at the beginning of the time the machines were in the factory, or at some other time for a short period, when we tried to do it out of good will to the Magic Tape Company.

X-Q. 85. While you were running this without heat, did you have any complaint in the lasting room? *A.* While we were running without heat we did have complaint from the lasting room, but it wasn't due to running the machine without heat; it was due to the inefficiency of one of the operators that was using one of the machines, as traced back and determined by myself

through the use of different case numbers which had been turned out in previous work by them.

X-Q. 86. How many operators did you have? A. Two.

Mr. Gates. No more questions.

Mr. Lyman. There is one question that Mr. Gates didn't venture to ask you, but he implied it. If this heat is in your opinion no good, why do you use it? Why do you turn on the heat, Mr. Campbell?

The Witness. Well, we turn on the heat because—I never thought of that before—but I would say we turn on the heat simply because the machine is supplied, comes supplied, with a plug connected to the heat and is is natural and desirable to use the heat as specified.

Mr. Lyman. It is the label on the machine that requires it, isn't it?

The Witness. There is a label on the machine that requires it. Yes, there is on our machine.

Mr. Lyman. That is all.

The Court. We will suspend until ten o'clock tomorrow morning.

Mr. Lyman. If your Honor please, the case has now come to a point, it seems to me, where we ought to have an inter partes test that will take defendant's machines and its material and try one test with the heat on, one test with the heat off, operate the machines in exactly the same way, have the process carried on the same way for the same length of time and let us come down to brass tacks and see if there is anything in it.

Mr. Gates. So do we, your Honor.

Mr. Lyman. We have got here these specimens of the defendant's materials which have come in this afternoon, of their precoated web, and we have got one of their machines which is at our disposal.

The Court. All right. They agree to it. What is the next suggestion?

Mr. Lyman. My next suggestion to your Honor is that tomor-

row we conduct this test, and we would like to have your Honor see it. It cannot be done in the court room here, but it can be done at the laboratory of the B. B. Chemical Company out in Cambridge.

Mr. Gates. Why not a shoe factory?

Mr. Lyman. I don't know, but whatever is convenient. We would like to have your Honor see it. If your Honor cannot do it, the only thing is to have it done inter partes and then come in here and report the result.

The Court. You can do that and have your expert come and tell me the result of it and have it go into the record. I don't see, if you are going to take the morning to do it, why I cannot start the other case and continue this until when?

Mr. Lyman. How long would your Honor's other case take?

The Court. They think it will take a day and a half. We can adjourn this until two o'clock tomorrow or ten o'clock Friday.

Mr. Lyman. Perhaps we better make it ten o'clock on Friday. That will give us one day, if that is convenient to your Honor. We will arrange with my brother for this test.

The Court. We may be able to clean up that admiralty case tomorrow.

Mr. Gates. May I ask your Honor one question, please? Do you expect requests for rulings and findings at the end of the case, and briefs, or how do you want us to handle it?

The Court. I would like your briefs, but I would not expect them Friday. I would like them pretty soon, as soon as you can get them out. I don't care anything about requests for findings. I will make findings.

Mr. Gates. Very well, your Honor.

Mr. Lyman. Could your Honor leave the precise date for briefs for later discussion?

The Court. Yes.

Mr. Lyman. Because there are some other things that come into my plans that may make me ask for leniency on that matter.

[Adjourned to 10 o'clock A.M. Friday, October 6, 1939.]

Federal Building, Boston,
October 6, 1939, 10 A.M.

LAWRENCE E. ANDERSON (Sworn).

Direct Examination.

Q. 1 (by Mr. Lyman). What is your name, Mr. Anderson? *A.* Lawrence E. Anderson.

Q. 2. Where do you live? *A.* 194 Concord Street, Brockton.

Q. 3. How old are you? *A.* Thirty-four.

Q. 4. With what concern are you connected? *A.* I am the president and treasurer of the H-B Products Company, incorporated.

Mr. Lyman. That, your Honor will recognize, is one of the licensees.

The Court. Yes.

Q. 5. It appears that you are supplying to the shoe manufacturing industry machines, precoated duck for use in reinforcing insoles, and an adhesive or top coat to be applied by the manufacturer in the machines to the duck. That is correct, is it? *A.* Yes, sir.

Q. 6. I am interested to ask you what the adhesive is, the top coat that you are supplying? *A.* A latex cement.

Q. 7. It is straight latex, is it? *A.* That is right.

Q. 8. A straight rubber latex? *A.* That is right.

Q. 9. Your trade, in using these machines of yours--do they use any heat at all? *A.* No heat.

Q. 10. And never have? *A.* Never.

Q. 11. Does that process work satisfactorily? *A.* Yes, sir.

Mr. Lyman. That is all.

Cross Examination.

X-Q. 12 (by Mr. Gates). Have you ever been in the shoe factory of the Diamond Shoe factory in Brockton? *A.* I have been there, yes, sir.

X-Q. 13. Were you in there when your materials were being used? *A.* No, sir.

X-Q. 14. So that you don't know whether it worked satisfactorily in there or not, do you? A. No, sir.

X-Q. 15. Now, you have said you used straight latex. A. Yes, sir.

X-Q. 16. What is added to it? A. There is nothing added to it. It is cut down with water.

X-Q. 17. It is cut down with water? A. Yes, sir.

X-Q. 18. No stabilizers? A. No, sir.

X-Q. 19. No adhesives? A. No adhesives.

X-Q. 20. Solvent, naphtha, or anything like that? A. No, sir.

X-Q. 21. Who does the cutting with water? A. A man in the manufacturing department, my supervisor, my inside man.

X-Q. 22. What is his name? A. Daverso.

X-Q. 23. Where do you get that latex? A. I get some from Charles T. Wilson Company, some from Ernest Jacoby Company, and some from the Heveatex Corporation.

X-Q. 24. How does it come? In the original drums? A. In the original drums.

X-Q. 25. You are supplying that under the patent with Mr. Sweany, aren't you—the latex? A. We are licensed by him, by Mr. Sweany.

X-Q. 26. You are licensed under the Sweany patent, are you not? A. That patent is assigned to us.

X-Q. 27. You operate under that, don't you, in supplying your latex? A. Yes, sir.

X-Q. 28. And the Sweany patent you are referring to is this one (showing document to witness)? A. Yes, sir, that is the patent.

Mr. Gates. I show the witness the Sweany patent 1,928,606 which is in the answer. No more questions.

HERBERT E. NUTE (Sworn).

Direct Examination.

Q. 1 (by Mr. Hammett). Your name, please? *A.* Herbert E Nute.

Q. 2. Your residence? *A.* West Bridgewater.

Q. 3. Your age? *A.* Fifty-two.

Q. 4. How long have you been making shoes, Mr. Nute? *A.* About 35 years.

Q. 5. What is your present position? *A.* Foreman.

Q. 6. What company, please? *A.* The Conrad Shoe Company.

Q. 7. How long have you been there? *A.* Seven years.

Q. 8. Been foreman with that company for seven years? *A.* Yes.

Q. 9. What process does the Conrad Shoe Company use in reinforcing insoles, Mr. Nute? *A.* The H. B. Process.

Q. 10. How long have you used that process? *A.* Ever since I have been there, seven years.

Q. 11. In practicing that process do you use exclusively the machine, the precoated duck, and latex top coat as supplied by H. B. Products Company? *A.* Yes.

Q. 12. Have you ever used any heat in that process? *A.* Never.

Q. 13. How does it work? *A.* Fine.

Q. 14. Never had any trouble with it? *A.* Never had any trouble with it.

Mr. Hammett: That is all.

Mr. Gates. No questions.

FRANK MAGUIRE (Sworn).

Direct Examination.

Q. 1 (by Mr. Hammett). What is your name, please? *A.* Frank Maguire.

Q. 2. How old are you, Mr. Maguire? *A.* Sixty-one.

Q. 3. Where do you live? *A.* Brockton.

Q. 4. You are a shoemaker, are you? *A.* Yes, sir.

Q. 5. How long have you been in the business? *A.* Thirty-five years.

Q. 6. What is your present position, please? *A.* Foreman of the E. J. Givren Shoe Company, Rockland.

Q. 7. Foreman of what department, please? *A.* Sole leather.

Q. 8. How long have you been with them, Mr. Maguire? *A.* Twenty years.

Q. 9. The reinforcing of insoles with duck, that has been under your supervision, has it? *A.* Yes, sir.

Q. 10. What process do you use? *A.* The H. B.

Q. 11. How long have you used it? *A.* About seven years.

Q. 12. Have you, during that time, used exclusively the machine and materials supplied by the H. B. Products Company? *A.* Yes, sir.

Q. 13. Have you ever used any heat with that process? *A.* No, sir.

Q. 14. You have never heated the top coat latex? *A.* No, sir.

Q. 15. How does it work? *A.* Fine.

Q. 16. Never had any trouble? *A.* No, sir.

Mr. Gates. No questions, your Honor.

E. JOSEPH HANNIGAN (Sworn).

Direct Examination.

Q. 1 (by Mr. Hammett). Your full name, please? *A.* E. Joseph Hannigan.

Q. 2. How old are you, Mr. Hannigan? *A.* Sixty-one.

Q. 3. Where do you live, please? *A.* 15 Oak Street, Middleboro, Mass.

Q. 4. How long have you been making shoes? *A.* Forty years.

Q. 5. What is your present position, please? *A.* Foreman.

Q. 6. With what company? *A.* John E. Lucey Company, Middleboro.

Q. 7. You are foreman of what department? *A.* The sole leather.

Q. 8. What process do you use at the Lucey Shoe Company for reinforcing insoles? *A.* H. B. Products.

Q. 9. You have used that for approximately six years, have you? *A.* Yes, sir.

Q. 10. Have you used exclusively, in practice, the H. B. process, and the machine and materials supplied by the H. B. Products Company? *A.* Yes, sir.

Q. 11. Have you ever used any heat in that process at all? *A.* Never.

Q. 12. In no way at all? *A.* No, sir.

Q. 13. How does the process work? *A.* Very satisfactory.

Mr. Hammett. That is all.

Mr. Gates. No questions.

ROGER T. PERKINS, *Recalled.*

Direct Examination.

Q. 233 (by Mr. Lyman). You told me about an instance that happened at the Milford Shoe Company in February, 1939, and you went out there one day—the Milford Shoe Company is said to be of the Magic Tape Company's customers. Tell us about that incident, please? *A.* On that particular incident in February, 1939, we called at the Milford Shoe Company in Milford, Mass. They were operating a Magic Tape machine. We took some temperatures, and we did that about 1.45. We had gone in there around noontime and, of course, they had gone out for lunch, and when we returned about quarter of one we waited for them to start up. We wanted to get some temperatures, and noted that no heat was on the machine. We said something to the operator about it, and they explained something to us about a new base had been put in because something had happened to the heating unit on the old one, and we asked the operator if the heat was on on this machine.

Mr. Gates. I object, your Honor, to this.

Mr. Lyman. Your Honor, I am not going to introduce any hear-

say. I think that can be stricken out if it does go in. That is not what I am asking.

A. (Continuing). And we found it had not been turned on. We waited for 45 minutes, at least, before taking any temperatures on that visit.

Q. 234. Meanwhile did the operator continue to use the device? *A.* Yes. They turned the heat on when we were talking to them about it, and we waited around for nearly an hour before we took any temperatures.

Q. 235. What was the temperature at the time you did take it after waiting? *A.* The temperatures, as we took them after waiting, of the latex coating was 82 degrees Fahrenheit, and the air temperature or the room temperature 82.

Q. 236. I think you told me also about going into that factory one morning and finding that the operator hadn't turned on the heat.

Mr. Gates. Please don't lead the witness.

Mr. Lyman. All right. I am sorry. He doesn't need any leading. I think, however, I have a right to refresh his recollection as to what I am talking about.

The Court. I understand you are stating something that is already in the record?

Mr. Lyman. No, your Honor. This is something that he had told me afterwards.

The Court. I understood your question to refer to some testimony he had already given.

Mr. Lyman. No, your Honor, it does not. If I have been guilty of leading the witness I regret it, but I am simply trying to call his attention to another incident.

The Court. Not testified to?

Mr. Lyman. No.

The Court. All right. Go ahead.

Q. 237. Was there such a case? *A.* Yes, sir.

Q. 238. What was the situation as you found it then?

The Court. When was that?

The Witness. March.

The Court. What year?

The Witness. March 21st, 1939, in the same factory at about 11.30 A.M. in the morning, and we reminded the operator then when we looked the thing over that apparently no heat was on, and we waited around, and they said they had forgotten to put it on; and we took some temperatures later.

Q. 239. You waited for how long? *A.* Well—

Q. 240. By the way, were they using the machine just the same? *A.* Yes, sir.

Q. 241. How long did you wait after the heat was turned on? *A.* Well, I think that this is—the note I have here about it—when I talked with them they had had the heat on for only about an hour.

Mr. Gates. Is this something—

Mr. Lyman. That, I think, would be hearsay.

Mr. Gates. I am objecting to hearsay.

Mr. Lyman. I agree that that should go out.

The Court. It may go out.

Q. 242. Anything that they told you is not admissible. They were using the machine without heat at that time? *A.* I couldn't say on that specific instance. All I know about that case was that they said they had been using it. They said the heat had only been on an hour.

Q. 243. We are not interested in what they said, you know, Mr. Perkins. *A.* All right.

Q. 244. You took the temperature of the latex that day, did you, at that time? *A.* Yes, sir.

Q. 245. After waiting for an hour or so? *A.* Yes, sir.

Q. 246. What was it after you waited for an hour with the heat on? *A.* I actually took the temperature at about 11.30 A.M., and the latex was 88 degrees and the room temperature 78.

Mr. Lyman. Now I am going to ask this witness, your Honor, a question which I do not regard as really pertinent to the issue in this case, bearing in mind the principle that what the court has

to pass upon is what happened before the filing of the bill, but the other side has introduced evidence which has been admitted for what it is worth, as to temperatures obtaining in their apparatus at various places since the filing of the bill. Now, I offer that as an explanation for the question I am going to ask the witness.

Q. 247. Have you measured the temperature of the latex in defendant's machines at different places since the filing of this bill, which was on June 16, 1938? *A.* Yes, sir.

Q. 248. Have you a record of the results which you got at such readings? *A.* Yes, sir, I have a copy of the notes.

Q. 249. Will you tell me all those readings which you have taken, and what they were? *A.* In the Commonwealth Shoe Company on September 15, 1938, at 8 o'clock in the morning, the temperature of the room was 78 and the temperature of the latex 90. In the same factory, December 5, 1938, at 1.15 P.M., the room temperature was 82 and the temperature of the latex 106. In the E. E. Taylor Corporation of Augusta, Maine, on December 8, 1938, at 7.30 A.M., the room temperature was 69 and the temperature of the latex 95. In the Milford Shoe Company—this is the one we have just mentioned—on February 15, 1939, at 1.45 P.M., the room temperature was 82 and the temperature of the latex was 82. In the Commonwealth in Whitman February 28, the first reading—

Q. 250. February 28, 1939? *A.* 1939, that is right. No, not the first reading, but in the first machine, No. 1 at 3 P.M., room temperature 76, temperature of the latex 80, and about the same time on the second machine a few feet away, the room temperature was 78 and the temperature of the latex 118. In the Milford Shoe Company on March 21, 1939, at 11.30 A.M. the room temperature was 78 and the latex temperature 88. In Stone & Tarlow on August 24,—I believe it is at 1.15 P.M.,—the room temperature 84—

Q. 251. That is July 24, isn't it? *A.* July 24, that is right. Room temperature 84, and the temperature of the latex 100.

Q. 252. Since that date I think there should be added a reading

that you made at the E. E. Taylor Corporation on August 4, 1939. Find what that was, please. *A.* August 4?

Q. 253. Perhaps you did not take any temperatures that day. I don't know about that. *A.* I don't see anything here about it.

Mr. Lyman. All right. That is all, Mr. Gates.

Cross Examination.

X-Q. 254 (by Mr. Gates). At the Commonwealth Shoe on February 28, 1939, the latex in one machine was 80 and in the other it was 118—is that right? *A.* Yes, that is right.

X-Q. 255. They were using both machines? *A.* Yes, sir.

X-Q. 256. What were the names of the operators? *A.* Margaret Stoddard was operating one machine.

X-Q. 257. Which one? *A.* The first one, what is called No. 1.

X-Q. 258. What was the temperature on that? *A.* The temperature of the latex was 80.

X-Q. 259. Who was operating the other machine? *A.* I don't know her last name but she is the daughter of the foreman.

X-Q. 260. She was operating the machine, and you saw the two machines being run while you were there? *A.* Yes, sir.

Mr. Gates. No more questions.

Redirect Examination.

Q. 261 (by Mr. Lyman). The temperatures which you have mentioned were taken of the latex in the bath in the machine? *A.* Yes, sir.

Mr. Lyman. That is all.

Recross Examination.

X-Q. 262 (by Mr. Gates). You took them as you testified about yesterday or the day before; you immersed the entire bulb of the thermometer in the latex? *A.* Yes, sir.

GUSTAVUS J. ESSELEN, *Recalled.*

Direct Examination.

Q. 82 (by Mr. Lyman). Doctor, you have previously testified in this case, have you not? *A.* Yes.

Q. 83. The expression "concentrated latex" has been used in this case. What does that mean, please? *A.* The average natural latex as it comes from the tree contains approximately 35 per cent of rubber. It is convenient for the purpose of shipping and in certain cases where it is used, to remove some of the water, and the concentrated latex is simply a natural latex from which some of the water has been removed so that the proportion of rubber and total solids has been increased.

Q. 84. We made some tests with defendant's material at the B. B. Chemical Company yesterday, did we not? *A.* Yes.

Q. 85. In the first place, who was present at those tests? *A.* There were Mr. Ellis, Mr. Hawley, Mr. Gates, Mr. Hodder, Mr. Thebeau, and Dr. Noble. Also Mr. Lyman, Mr. Cobb, Mr. Hammett, Mr. Rood, Mr. Clifford, Mr. Gregory, Mr. Stewart, Mr. Perkins, and myself.

Q. 86. We used in those tests the defendant's machine that was offered in evidence in the courtroom? *A.* Yes.

Q. 87. And the two specimens of defendant's materials in evidence as Plaintiff's Exhibits— *A.* 15 and 16, I think.

Q. 88. 15 and 16, which were produced by Mr. Ellis here the other day? *A.* Yes.

Mr. Lyman. May I say to the court that one of the labels on one of those cans fell off and inadvertently got put back on the wrong can, and Mr. Gates and I were present and we have agreed that the correction had best be made by simply changing the number of the exhibits as printed in the record, just correcting the record to make the exhibit numbers correspond with the labels that are now on those two samples. That is agreed to.

Q. 89. What was the general purpose of these tests, Doctor? *A.* The general purpose of the test was to operate the defendant's

machine in the reinforcing of insoles, using the two types of top coat which had been offered in evidence, Exhibits 15 and 16. These were, each of them, operated at the temperature of the room, and each of them were again operated at a temperature of 115 degrees Fahrenheit, as nearly as we could maintain it during those experiments. The purpose of the test was to ascertain, first, how soon a bond could be obtained between the gem duck to which the adhesive had been applied and the innersole. Some testimony had been offered as to the period of time required before it was possible to pick up the sole by taking hold of a piece of the gem duck after it had been applied and hold the weight of the inner sole. So that the first object of the test was to determine approximately how long that required. The second object of the test was to make some pull tests on these reinforced soles on a Scott tester, to determine the amount of the bond, approximately 11 minutes after the reinforcing duck had been applied to the innersole. Those tests were run, as I have said, in duplicate, without heat and with heat, and the results were noted.

Q. 90. What insoles were used in the tests? *A.* There was a lot, as I remember it, of something over 300 innersoles which were provided for the test. All I know is that they were there ready in the room when we got there in the morning.

Q. 91. They were looked over by— *A.* They were looked over by both Mr. Thebeau and Mr. Perkins, and it was agreed between them that they were representative soles such as might ordinarily be met with in a shoe factory. While there was some variation from sole to sole, that is natural in any product and is unavoidable. There was no more variation than would ordinarily be met with in the soles in a shoe factory.

Q. 92. The precoated duck that was used in these tests was a roll of defendant's product that was brought in by Mr. Ellis, was it? *A.* That is correct.

Q. 93. And Mr. Hawley tended the machine during the operations, did he? *A.* Mr. Hawley tended the machine and made any adjustments which were necessary.

Q. 94. Set it up? *A.* Set it up and operated it.

Q. 95. And took the steps necessary to develop the temperature desired in the case of the 115 degree temperature? *A.* That is right.

Mr. Lyman. May I add, your Honor, that Mr. Gates and I agreed that we might take the tests at 115 degrees Fahrenheit, as near as possible, without prejudice to anybody's contentions in this case?

Mr. Gates. That is right.

Mr. Lyman. We could have taken more tests, but these tests take quite a time and we did not get through until 6 o'clock. We had originally planned to take more tests. We did not get through until nearly seven, as a matter of fact.

Mr. Gates. The figure of 115 degrees was a compromise so that we could get through the same day.

Q. 96. In the first place, how many different tests were made with the latex unheated, without any heat? *A.* In each instance one set of tests, which consisted of running through in each case 10 pairs of soles 20 soles. One set of tests was made by Mr. Perkins as the operator and one set of tests was made, a similar test under the same conditions, by Mr. Thebeau.

Q. 97. Mr. Thebeau was the witness who testified here for the defendant? *A.* Mr. Thebeau is a witness who testified here. So that altogether there were four sets of tests run without heat and four sets of tests with heat. Each of the top coat adhesives were run cold by the two operators, making four tests, and each was run hot by the two operators, making four tests.

Q. 98. As to the technique, the procedure by which the operators worked—was that agreed to by the parties? Do you know how that was? *A.* Before we started to run the tests I asked Mr. Gates how he would like to have them run, and after conference with his colleagues he came back and said that he would leave the operation of the tests entirely to us. As a result, the tests were run exactly as they were run by Mr. Perkins here in the courtroom the other day. A convenient length of the duck was run out

from the machine with the adhesive applied to it, the sole was then brought in contact with the duck, the duck was cut off, and the forming in operation performed immediately.

Q. 99. With the hand tool? *A.* With the hand tool. Then a second sole was treated in the same way, and so on, each sole being formed in by hand just as soon as it was applied to the duck. Perhaps it would be convenient if I went ahead now and explained the whole sequence of operation.

Q. 100. May I just ask, did Mr. Thebeau follow about the same procedure? *A.* Mr. Thebeau followed the same procedure.

Q. 101. Go ahead. If you will explain the sequence of operation, Doctor? *A.* After the 20 soles were completed we took them immediately to a machine known as the reinforcer and trimmer, which simply forces the gem duck into the corner formed by the ridge which sticks out from the sole and then simply trims off the surplus fabric that is not required. In a measured interval of 11 minutes from the time that the experiment started we then took ten soles from our collection, at random, that were selected at random by Dr. Noble in each case, to determine the strength of the bond between the gem duck and the leather by pulling it on a standard Scott tester. The Scott tester makes a record like this—I will just pick one out at random [showing paper to court]. The Scott tester, I might explain, has two jaws—

Q. 102. May I interrupt, Mr. Witness? We have here a photograph that I think you could use to explain to his Honor [handing photograph to witness]. *A.* This is a photograph of the Scott tester. The sole is secured at the bottom by one of the jaws of the Scott tester here; and another jaw is here, and has been made to take hold of the piece of gem duck which was in adhesion to the sole. Those two jaws move apart mechanically at a fixed rate of speed, a uniform rate of speed. Here is the chart, similar to this one I am showing you here, and you will note that there is a pen point which moves up this chart as these jaws move apart and the pen point makes a record. In this case it starts here [indicating] and goes up this way, and then the chart has to be shifted to the

position indicated by No. 2. If this chart were long enough it would be just one long continuous curve. Since the chart is not long enough we have to start over again, then it comes up here and the pin is immediately shifted down to this point here and the curve follows the same as drawn here finally to this point [indicating], where the jaws are pulled as far apart as they will go and the test is finished.

Now, as to the interpretation of these charts, there are several ways in which this may be done, and I discussed the matter with Dr. Noble, and we agreed that the most satisfactory way of interpreting the results shown by these various charts was with what is known as a planimeter to determine actually their area. In those three curves that shows us a total area, and if divided by three, we get the average strength of the bond as indicated by the Scott tester between the sole and the gem duck. Is that clear to your Honor?

The Court. Yes.

A. (Continuing). These figures they have on each one of these charts, and each bears a number, Roman numerals showing the series, and the 16 indicating that was the sixteenth sole on this experiment. For convenience to determine the strength, ten of the soles were taken in order to give us a reasonable and reliable average of the results.

The Court. That operation was done eleven minutes after?

The Witness. That operation was done eleven minutes after the first sole was applied to the gem duck.

The Court. The other test measured by the time that elapsed between the application of the sole and the set?

The Witness. No, the other test was simply made while the operator was applying the gem duck to the soles.

The Court. Let me ask you this. Was this the same test Mr. Noble used?

The Witness. As I understand, it was the same test Mr. Noble used only it was applied just as quickly after the forming in operation as I could pick up the sole. The exact interval was n

measured, but immediately after the sole was formed in by the operator I took several of them, picked them up by the corner of the fabric just to make sure they would hold the weight of the sole, and in each case they did. Immediately after these two were put together—

Mr. Lyman. You mean after?

The Witness. Immediately after the gem duck and the innersole were formed in together, at random, while he was making 20 soles, I would pick one up this way, and pick one up this way [indicating], simply to make sure it would hold the weight of the sole, and in each case it did.

Q. 103. Whether there was any heat used in the operation or not? *A.* Whether there was any heat used in the operation or not made no difference.

Q. 104. And whichever operator did the work? *A.* Whichever operator did the work. In each case I picked one up it held its own weight.

The Court. Even though operated without heat.

The Witness. Yes.

Q. 105. Now, this 11-minute interval, there wasn't any significance about that, was there—as soon as the forming had been done it was applied to the reinforcer, and that product put on the reinforcer as promptly as you could? *A.* Yes.

Q. 106. And then went to the Scott tester? *A.* Then went to the Scott tester, yes, and there was a variation of a minute or half a minute or a minute and a half—the important thing was we wanted to start all the tests at exactly the same interval of time after the starting of the experiments.

Q. 107. It turned out to be about 11 minutes? *A.* Yes.

Q. 108. The Scott tester, or the operation of the Scott tester took considerable time? *A.* Each test takes two minutes.

Q. 109. So you tested about 10 insoles on each test? *A.* Yes.

Q. 110. The whole operation on one set of these samples you think took about 20 minutes? *A.* That is correct.

Q. 111. Have you before you the graphs made on the Scott tester? *A.* Yes.

Mr. Lyman. I will offer this set of graphs in evidence, your Honor.

The Witness. There are eight sets of graphs.

Mr. Lyman. Before offering them in evidence I will ask you to state as to the set Roman I, sub-numerals 2, 4, etc. What were the conditions of operations in this test, Roman I?

The Witness. In series No. I the adhesive used was the No. 219 of the defendant, Exhibit 15.

Q. 112. Who was the operator? *A.* The operator was Mr. Perkins

Q. 113. In Series II, Roman II, what were the conditions? *A* The same adhesive, and the operator was Mr. Thebeau.

Q. 114. There was no heat used in either of those tests? *A.* There was no heat used in either of those tests.

Q. 115. On the series Roman III, what was used there? *A.* The adhesive marked No. 1, the adhesive of the defendant, and the work was done by Mr. Perkins. There was no heat used.

Q. 116. The series marked Roman IV, what were the conditions there? *A.* The same adhesive, No. 1, no heat was used, and the work was done by Mr. Thebeau.

Q. 117. On series Roman V, what were the conditions there? *A.* That was also the same No. 1 adhesive. Heat was used in this series, and the work was done by Mr. Perkins.

Q. 118. The heat being such—you mean the latex? *A.* The latex temperature was 115 degrees Fahrenheit.

Q. 119. On Series Roman VI, what is that? *A.* The same adhesive, No. 1 adhesive. The temperature of the latex at the start of the experiment was 115 degrees Fahrenheit, and at the end 120 degrees Fahrenheit. The work was done by Mr. Thebeau.

Q. 120. And the series Roman VII? *A.* The adhesive was the No. 219. The latex adhesive of the defendant, Exhibit 15. The temperature of the latex at the start of the experiment was—the temperature of the adhesive at the start of the experiment was

116 degrees Fahrenheit, and at the end of the experiment 118 degrees Fahrenheit, and the work was done by Mr. Perkins.

Q. 121. And the Series Roman VIII? *A.* The adhesive was No. 219 adhesive of the defendant. The temperature of the latex at the beginning was 115 degrees Fahrenheit and at the end 120 degrees Fahrenheit, and the work was done by Mr. Thebeau. I would like to explain about these temperatures I have given. They were checked by both Dr. Noble and myself.

Q. 122. You might tell us, by the way, what the temperature of the surrounding air in the room was during the day. *A.* It varied from 78 degrees Fahrenheit at the time of the first series. It was 79 at the time of the second series, it was 80 at the time of the third series. It was 79 at the time of the fourth series, it was 82 at the time of the fifth series, it was 79 at the time of the sixth series, and 80 at the time of the seventh series, and 79 at the time of the eighth series.

Q. 123. I should like to know what the temperature of the latex was in the experiments in which no heat was used. That will be experiments I, II, III and IV. *A.* In series No. I the temperature of the latex adhesive was 75 degrees Fahrenheit at that time, with the room temperature at 78. In the second series when the room temperature was 79 the temperature of the latex adhesive was 74. On the third series the room temperature was 80, and the temperature of the latex 75; in the fourth series the room temperature was 79 and the latex temperature 74.

Mr. Lyman. I will offer in evidence these records or graphs to which the defendant has testified. I think they may be put in collectively, Mr. Gates, as one exhibit.

Mr. Gates. Yes.

[Series of graphs, eight in number, are marked "Plaintiff's Exhibit No. 18".]

Q. 124. I would like to know what the readings of the so-called planimeter is, if that is the term. *A.* Yes, that is correct.

Q. 125. What do these graphs show? Did you prepare the schedule?

Mr. Lyman. Mr. Gates, the doctor didn't do this work on the planimeter. It was done by Mr. Gregory, who is here as a witness. May they go in, or would you like to have Mr. Gregory testify to them?

Mr. Gates. I don't admit the accuracy of the calculations, but there is no point in calling Mr. Gregory. That would be a waste of time. You may put them in without calling Mr. Gregory, but subject to correction if error appears.

Mr. Lyman. Yes, certainly.

Mr. Gates. We do not dispute the planimeter calculations made. If I had seen it it would not have made any difference, I would not have known what it is all about. But subject to correction, we have no objection to this going in.

Mr. Lyman. We have here, your Honor, Mr. Gregory's original sheet which may be marked for identification.

The Court. Are these the results that he got by reading these?

Mr. Lyman. Yes, your Honor. Here are the original sheets of Mr. Gregory, and I have had the doctor tabulate them. Have you seen these, Doctor [handing papers to witness]?

The Witness. No, I have not. I have seen these [indicating originals], but I have not seen the copy.

Mr. Lyman. You might look them over. It just came in to us in the court room since we arrived, your Honor. But if we have these sheets of Gregory's in evidence, your Honor, these tabulations can be checked up by them. I think I will offer as Plaintiff's Exhibit 19 two sheets representing Mr. Gregory's calculations of measurements, planimeter measurements.

The Court. Yes.

Mr. Lyman. There are two sheets to this, and they will be marked Plaintiff's Exhibit 19.

[Two sheets of planimeter measurements by Mr. Gregory are marked "Plaintiff's Exhibit 19".]

Perhaps your Honor would like to study these for a moment or, at least, I would, to see the arrangement in the parallel columns. I would like to see how they are set up. If your Honor will pardon

me for just one second, or perhaps more than one second, for familiarizing myself with this arrangement. All right. I think I will ask you now to speak from this tabulation which you have prepared, Doctor. May I have them first offered in evidence as Plaintiff's Exhibit 20, a tabulation prepared under the witness's direction, of the results shown on Mr. Gregory's records of the planimeter measurements.

[Tabulations prepared by witness of planimeter measurements is marked "Plaintiff's Exhibit No. 20".]

Q. 126. Now, you have divided this chart, for comparison, into two parts, a left-hand part and a right-hand part, the left being the records of results of Perkin's work, and the right records of the result of Thebeau's work? *A.* That is correct.

Q. 127. Thebeau was just operating because the defendant wished to have him be the operator on this? *A.* That is right.

Q. 128. Now, taking the left-hand part, Perkin's work, Series I and Series VII were comparable, same material, same operator, Series I used no heat, and in Series VII the latex was raised to a temperature of 115 degrees Fahrenheit? *A.* That is right.

Q. 129. Series III and Series V used, instead of Defendant's D-219, they used this other formula called No. 1? *A.* That is correct, for Series III and Series V.

Q. 130. And those results are comparable, made by the same operator, with the same material, except that the first one, No. III, Series III, the latex was unheated, and in Series V the latex was heated to a temperature of 115 degrees Fahrenheit? *A.* That is correct.

Q. 131. Now, compare the pull on the Scott tester between Series I and Series VII and between Series III and Series V. *A.* The average pull in Series I was 5.6 pounds, and average pull in Series VII was 5.5 pounds. In other words, the results are practically the same, showing that in those two comparative tests there was no difference in the result whether the experiment was carried on at room temperature or whether the operation was carried on at 115 degrees Fahrenheit.

Q. 132. Now, compare the results of Series III and Series V, please. *A.* The average pull for Series III is 6.8 pounds, and average pull in Series V is 5.8 pounds. There again there is not very much difference, though such difference as there is would seem to indicate that you obtained a slightly stronger bond at ordinary temperatures than at 115 degrees Fahrenheit. But, as I say, the difference is not marked.

Q. 133. All right. Let us turn to Mr. Thebeau's work, No. II series. Compare Series II with Series VIII. That was Thebeau's work, wasn't it? *A.* Yes.

Q. 134. In that case he was using Defendant's 219 material, in Series II, without heat, and in Series VIII with heat? *A.* That is correct.

Q. 135. What result does the tester show as to the pull in those samples? *A.* In Series No. II the average pull was 4.1 pounds; in Series No VIII the average pull was 4.7 pounds. There again the difference between the two readings is of little significance. In this comparative series of experiments there is a slightly higher result given by the operation with heat than without, but there again the difference is not sufficiently great to be of any very large significance.

Q. 136. Now, compare the results of the pull test of Mr. Thebeau's specimens made in Series IV and Series VI respectively He was using defendant's material called No. 1? That was used? *A.* That is right.

Q. 137. In Series IV without heat, and in Series VI, with 115 degrees temperature? *A.* That is right.

Q. 138. What result did this show? *A.* In Series IV the average pull strength test was six pounds when operated without heat, and 5.8 pounds when operated with heat, a slightly higher strength thus was obtained when operating without heat, but as in the case of the other three comparative results the difference was small.

Q. 139. There are considerable variations in the pull in each one of these columns. To what are those variations attributable? *A.*

There are variations in each one of these columns, and that is why we pulled as many as ten soles in order to get a reasonably reliable average. The reason for that is that in any natural product, such as leather, there is a considerable variation from piece to piece, even in the same skin, and that is partly responsible for this difference in each column. And, of course, each of these combinations was laid up—that is, the gem duck on the leather, by a man, and there is always the human element entering in there unavoidably. Those are practically the two factors that account for such differences as there are.

Q. 140. Dr. Noble testified, as I recall it, that certain experiments that he had made in his laboratory indicated that the rate of the evaporation of water from these materials was greater when subjected to some heat than when they were cold, and he attributed, as I recall it, a great deal of importance to that fact. Now, is it true that there is theoretically greater evaporation from water when it is at a higher temperature than when it is at a lower? *A.* When it is at a higher temperature it evaporates more rapidly than at a lower temperature.

Q. 141. Do these tests prove whether or not that evaporation makes any difference in shoe manufacturing? *A.* No, I don't see that they do. Of course, in asking that question you are assuming that the rate of evaporation has been varied between whether the latex was heated or whether it was at room temperature. But, in view of the results as I have just read them from this chart, I find no indication that evaporation is the controlling factor.

Q. 142. In other words, if it should be, Doctor, that there is a greater evaporation in the case of the heated latex than in the unheated, it is shown not to make any difference. Is that your view? *A.* Yes, that is right.

Q. 143. Either on the immediate bond or on the ultimate bond? *A.* Either on the immediate bond as measured by taking the test as soon as possible, as soon as it is formed in, or on the ultimate bond after eleven minutes.

Mr. Lyman. I think we ought to have some of these insoles that

were reinforced in those operations available for use by the court. I do not seem to have any in the courtroom, your Honor, but I have no doubt Mr. Gates and I can agree and put some in at a later date.

The Court. A few of each series?

Mr. Lyman. A few of each series. We will do that by agreement.

The Court. I do not think you need the whole ten.

Mr. Lyman. No, I don't think so. I will now offer in evidence as Plaintiff's Exhibit 21 the photograph of the Scott tester to which the witness has testified.

[Photograph of Scott tester is marked as "Plaintiff's Exhibit 21".]

Q. 144. Supposing the water did evaporate from this latex composition a little more rapidly if the heat were applied to the latex to warm it up than if it were not. Could you compensate for that by the difference in length of the material that the operator pulls out? *A.* Yes, you could easily compensate for that by the amount of gem duck that is laid out on the bench after the adhesive has been applied. If you work farther away from the machine there will be more opportunity for evaporation before the sole is applied to the duck; if you work nearer to the machine there will be less opportunity for that evaporation.

The Court. In these tests were you working right up to the machine?

The Witness. No, your Honor. In the tests conducted by Mr. Perkins he stood in practically the same place in all of the tests.

The Court. About the same as he did here?

The Witness. Approximately the same as he was here. About 28 to 30 inches, we agreed yesterday, was the position that he was working in. In Mr. Thebeau's tests, in some of the series he worked nearer to the machine than in others, but in all cases he worked a little nearer to the machine than did Mr. Perkins.

Q. 145. These planimeter readings as recorded by Mr. Gregory were made on that part of the curve which you and Dr. Noble

agreed to be the proper part to measure with the planimeter? *A.* Yes, sir.

Mr. Lyman. Your witness, Mr. Gates.

Cross Examination.

X-Q. 146 (by Mr. Gates). Dr. Esselen, in all of these tests of yours showing immediate tack, in which you held up the sole by the corner of the canvas somewhere, did you tell Dr. Noble that a time interval had elapsed between the application of the material to the sole and the time you picked it up? Did you note any time interval? *A.* No. I did it just as quickly as I could after the sole was formed in.

X-Q. 147. But you noted no time interval? *A.* I did not note the time interval.

Mr. Gates. No more questions. If your Honor please, these were in a way inter partes tests, and with your Honor's permission I would like to put Dr. Noble on for a very short time, at Mr. Lyman's convenience and your Honor's convenience.

Mr. Lyman. Just a moment. I have not quite rested yet.

FRANK W. HAWLEY, *Recalled.*

Direct Examination.

Q. 188*a* (by Mr. Lyman). You were present at the tests yesterday, weren't you? *A.* Yes, sir.

Q. 189. In the defendant's machine there is this roll which dips into the latex and brings the latex up into contact with the duck? *A.* Yes, sir.

Q. 190. And that roll dips into the latex to what extent? *A.* About a quarter of an inch.

Q. 191. A great mass of the roll is not in contact with the latex? *A.* No. Of course the bottom there, the very deepest part, is down about a quarter of an inch.

Q. 192. And the roll is naturally a good deal cooler than the latex? *A.* About a third of the roll is in the latex.

Q. 193. The body of the roll is naturally a good deal cooler

than the latex is when the temperature is raised? *A.* No, I don't think it is. That is, the top of your roll, as it turns around, of course is a little bit cooler than the bottom.

Q. 194. Have you ever tried that by feel and found that the temperature of the roll does not come up anywhere near to the temperature of the latex? *A.* The top of the roll is not quite up to that, of course.

Q. 195. The top of the roll is not up? *A.* To what it is down in.

Q. 196. Naturally not because it stands a good deal of the time idle, with seven-eighths of its mass up in the air? *A.* Yes.

Mr. Lyman. I think that is all. The plaintiff rests, your Honor.

Additional Evidence for Defendants.

ROYCE J. NOBLE, *Recalled.*

Direct Examination.

Q. 134 (by Mr. Gates). Dr. Noble, you have given copies of the test results, or the results of the tests that were made yesterday? *A.* I have copies of the tests.

Mr. Gates. I am going to offer this in evidence as Defendant's Exhibit F.

[Tabulation, "Summary of Results of Tests", is marked as "Defendant's Exhibit F".]

Q. 135. Now I would like you to interpret for the benefit of the court what those tests show, in your opinion. Will you give your interpretation of those tests, please, as illustrated on the tabulation, or explain the tabulation, Defendant s Exhibit F? *A.* In this tabulation the results have been arranged to show the series of tests so as to compare the results obtained under hot and cold operation. Now, under each of the columns marked "Cold Test" and "Hot Test", there are subcolumns showing the pounds pull,—that is, the result obtained on the Scott tester, which Dr. Esselen has described, and also the time of operation of the test, which I do not recall was mentioned by Dr. Esselen. This time of operation is the time from the start of the test, as measured by a stop watch, up until the complete laying in of the twenty insoles was

done. At the end of that period there is—namely, in the first column there is one, and the time is two minutes and seven seconds. That is the elapsed time as measured by the stop watch, from the beginning of the test until the twenty soles were made, ready to be taken down.

The Court. What is that?

The Witness. Twenty soles made in each case.

Mr. Gates. Ten pairs, your Honor, or twenty soles.

The Witness. Twenty soles. Then half of those were tested, and the other half held in reserve.

The Court. You mean that they made tests with this machine on twenty insoles in two minutes and seven seconds?

The Witness. No, I have not made that clear. This does not include the time of testing the insoles; it is simply the time of laying the canvas into the sole, which was done by the operator. The time required by that operator to actually do this work of laying in.

The Court. Before putting on the machine?

The Witness. Yes. And before it was trimmed.

The Court. So that the time which elapsed between the test and the application was two minutes and seven seconds?

The Witness. Before the completion of the application to the sole. Now, the figures given in all cases for the pounds pulled are taken from the test as shown on one of the exhibits already submitted. I do not think the times of operation have previously been put in evidence, but these were observed by both myself and Dr. Esselen at the time. In the case of the first hot test, that is a series in which there was some uncertainty as to the actual time required there. Through some mischance the time was not accurately recorded. I noted the time as one minute and 35 seconds, and some more was estimated as being approximately 2 minutes. It was certainly not more than that, and probably slightly less. In any case, that reading is uncertain. That is the meaning of these figures as arranged.

The Court. Eleven minutes was the time between the application of the coating and the testing?

The Witness. And the beginning of the testing on the Scott tester, as Dr. Esselen stated.

The Court. I do not believe I get the significance of that time.

The Witness. This is really a measure of the speed of operation. It is the time taken by the operator working with various compounds under different conditions to put twenty pieces of duck in twenty soles. In other words, it corresponds to, or it is an indication of the speed with which the operator could work.

The Court. I get it.

The Witness. Now, with Mr. Perkins as the operator, and using the defendant's compound 219, operating in the cold, he required two minutes and seven seconds, and operating in the hot he required—the best I can say is, not over two minutes. We know it was one minute and 35 seconds. In any case, the lesser time is taken working the hot compounds. Working with the No. 1 compound, the same operator, the time required cold is 2 minutes and 4 seconds, and with the hot compound the time required was only 1 minute and 48 seconds. The next two lines show the time required by the other operator, Mr. Thebeau. Working cold with the No. 219 compound he required 2 minutes and 57 seconds with the hot compound 2 minutes and 47 seconds; and with the No. 1 compound 2 minutes and 54 seconds cold, and with the hot 2 minutes and 32 seconds. This tabulation, then, serves primarily as a comparison of the operating times required by two operators using two different compounds, both in the hot and in the cold, the hot being the temperature as stated by Dr. Esselen.

Q. 136. Do the results of the tests that you saw yesterday change in any way the testimony you gave on your direct examination before? *A.* No.

Mr. Gates. Your witness, Mr. Lyman.

Cross Examination.

X-Q. 137 (by Mr. Lyman). Doctor, there was not any purpose in making these tests to see how fast an operator could work with a hot process as against how fast he could work with a cold

process, was there? *A.* I don't know what the plaintiff's purpose was, but it seems to me that it is a very pertinent bit of information.

X-Q. 138. Well, if you were going to find out whether an operator can work more speedily, get more production out with a hot process than with a cold process, you would do it under very different conditions than yesterday, wouldn't you? *A.* Not necessarily.

X-Q. 139. Do you mean to say that you could tell that by a two-minute operation repeated four times by one particular operator or two particular operators, on 20 soles? *A.* That is an indication of the bond of the sole, which is an indication of your working operations. It is a limited test in either case.

X-Q. 140. If you were going to make that sort of a test you would certainly need factory conditions, with an operator who was accustomed to the work and who knew what he was working with, wouldn't you, and you would test him for days at a time? *A.* It would be preferable to run every test under factory conditions.

X-Q. 141. You would not attach any firm results to such a 2-minute operation on a question like this, would you? *A.* I would attach as much result to that as I would to the bond itself.

X-Q. 142. I am just asking you, forgetting the bond itself, would you attach any firm importance to a test like that, as it was conducted yesterday, as to the relative speed of operation possible for an operator with warm latex or cold latex? *A.* I don't think I could forget the bond test. These were run as sample tests.

X-Q. 143. That is the best answer you can give me to that question? *A.* Yes.

X-Q. 144. Now, you say one of these measurements is not correct because someone forgot to start the watch at the time that the operator began to work. Is that right? *A.* That is right.

X-Q. 145. And nobody knows how many soles he had worked on before the watch was started? *A.* I can't say as to that. I dis-

covered, after the test was in progress, or towards the end, through Dr. Esselen, that there had been a mistake. I didn't understand—

X-Q. 146. That was a pure guess or an approximation in that case, then, would you say? *A.* If it was a guess it was Dr. Esselen's guess, not mine.

X-Q. 147. True enough, but it was a pure guess? *A.* Presumably, yes.

X-Q. 148. All right; there is one reading that is entirely vitiated. I will ask you if you don't remember that instance when Thebeau was doing his work, when he stopped to point out that there was a place where there had not been adhesion between the material, the reinforcing material, and a certain channel of the shoe, or that the channel had bent over, or something—do you remember that? *A.* As I recall the matter, that was the last sole in one series.

X-Q. 149. But at any rate— *A.* And he stopped at the end of the sole, at the end of the sole-laying operation.

X-Q. 150. But before the timing had been taken? *A.* I don't know.

X-Q. 151. Now, again, don't you remember that there was a pause at one time during Thebeau's operations for the material that was coming through, the web or fabric or duck that was coming through the machine, to be straightened out? *A.* I don't recall it. There may have been. I don't recall seeing that.

X-Q. 152. No allowance was made for instances like that in this timing, was there? *A.* I did not operate the stop watch; Dr. Esselen did.

Mr. Lyman. That is all.

Mr. Gates. No more questions.

Mr. Lyman. We will add to the record some of these insoles that were reinforced yesterday, as exhibits, and we will give a note of them to the reporter. Mr. Gates and I will agree upon that.

[Subsequently marked "Plaintiff's Exhibit 22A", "B", "C" and "D".]

Nov. 3, 1931. E. A. ELLIS 1,830,42

MANUFACTURE OF INSOLES

238

Filed Nov. 8, 1929

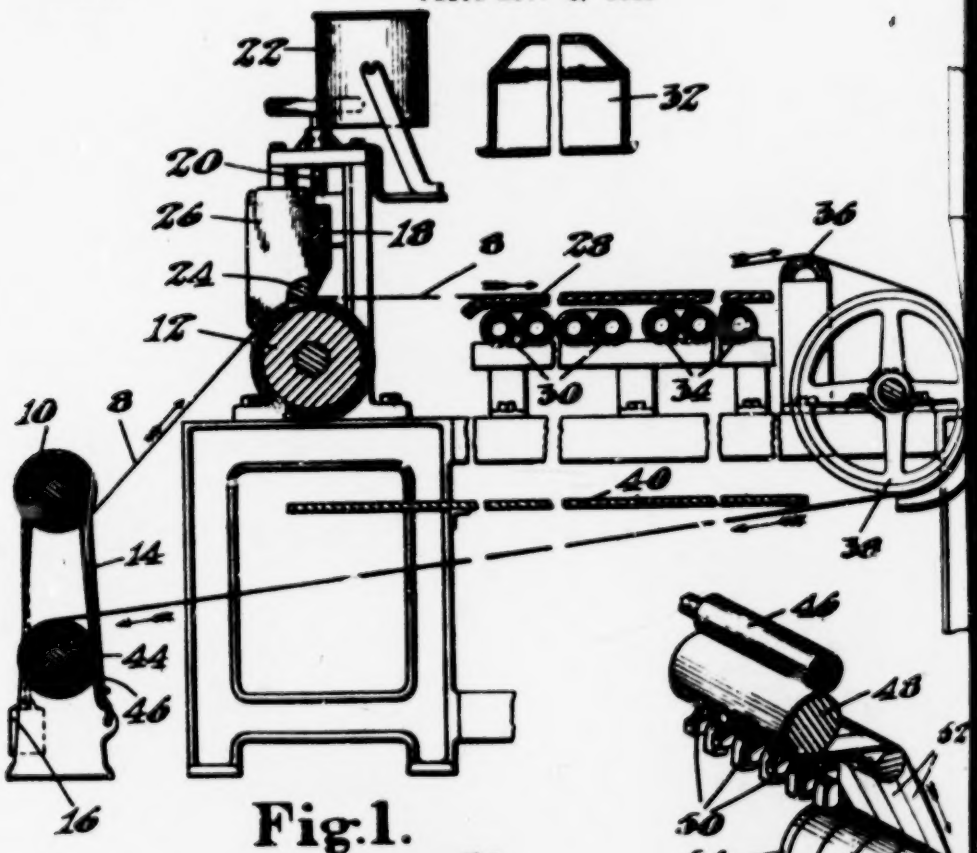


Fig.1.

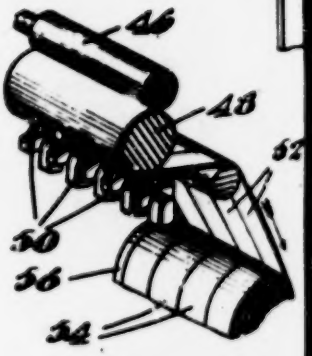


Fig.2.



Fig.4.



Fig.3.

Fig.5.

INVENTO

Elmer A. Ell

By his Attorneys

UNITED STATES PATENT OFFICE

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MANUFACTURE OF INSOLES

Application filed November 8, 1929. Serial No. 406,737.

This invention relates to the manufacture of insoles. The invention is herein illustrated with special reference to its application to the coating of fabric and to use of the fabric in reinforcing insoles, to cement compositions for use in coating such fabric, and to fabric coated therewith.

It has long been a practice in the manufacture of shoes, particularly welt shoes, to reinforce insoles by cementing thereto a layer of duck, canvas or the like textile fabric material, the fabric being shaped to the sewing lip or rib of the insole to reinforce the lip, thereby forming a more secure anchorage for the inseam stitches. The usual practice in the reinforcement of insoles has been to employ a strip of fabric of approximately the width of the insole, having several coats of thermoplastic material containing gutta percha or gutta siak. The coated strip had to be heated just prior to its application to the insole to render the coating tacky and had to be formed while hot to the lip of the insole in order to secure proper adhesion of the strip to the insole. The degree of heat required to put the material in the best condition for use was rather critical and hence considerable skill and attention on the part of the operator were required in order to produce uniform results. The operator also lost considerable time in waiting for the material to heat up. Also, the strip was supplied to the operator in a roll and since the coating, even at ordinary temperatures, was tacky, there was adhesion of the strip in the roll and it was therefore difficult for the operator to unwind the strip.

When an insole reinforced by the described process was incorporated in a shoe and the shoe placed in the toe steamer to condition the box toe for the lasting operation, it was found that the steam was likely to cause the hold of the thermoplastic gutta percha or gutta siak coating on the insole to loosen and the reinforcing material to draw away from the insole, particularly at the lip or rib where adhesion was important. None of the attempts made to mitigate this condition was entirely satisfactory. Furthermore, the coated material supplied to the shoe manufacturer was sometimes found unsuitable for use because of variations in the coating composition which made it too tacky or not tacky enough and even if the coated material worked satisfactorily when first received it was apt to deteriorate in a short time, especially in hot weather.

On the other hand, the attempts which have been made to develop a "cold process" which would meet with general approval on the part of shoe manufacturers have been unsuccessful. For example, a strip of duck was drawn through a cement applying device of usual construction by which a single coating of ordinary fluid rubber cement containing a large proportion of solvent was applied to one side of the strip. In order for the coating to become tacky (instead of slimy) and thus suitable for use, a large part of the solvent in the cement on the strip was allowed to evaporate through exposure to the air. This exposure of the strip took up a large amount of space in the factory and waiting for the strip to dry consumed an impracticable amount of time. Moreover, the adhesion of the strip was inadequate because the coating was too thin. Attempts have also been made to use a strip having a permanent tacky coating much like that of surgeon's plaster. This material, however, if it had sufficient tackiness to enable it to be satisfactorily used when cold for reinforcing insoles also had sufficient tackiness to cause it to adhere to itself in the roll so that pulling the strip off the roll was difficult and undesirably increased the labor of the operator and decreased the output.

In view of the foregoing and other considerations, I have provided a novel method of coating fabric and of using such fabric in reinforcing insoles. In the practice of my preferred procedure I use a suitable fabric, such as gem duck, coated in the web with a cold rubber cement composition containing rubber, a resin and a solvent and capable of being rendered permanently non-tacky upon volatilization of the solvent and consequent drying of the coating. The web is then heated to evaporate the solvent, thus rendering the coating non-tacky and the web is cut into

strips and wound into rolls which, because the cement is non-tacky, can be easily unwound.

The resin content of the coating composition employed for the first coating consists preferably of Burgundy pitch (a resin the usual source of which is the Norway spruce, *Picea abies*) in the proportion of one part pitch to three of rubber. A filler, such as zinc oxide, is preferably used to facilitate spreading of the composition, two parts of filler to one of pitch being satisfactory.

Prior to the use of a strip as reinforcing material, a coating of rubber cement composition is applied by the shoe manufacturer at room temperature and a portion of the strip is applied almost immediately to the insole which is to be reinforced. This coating, while it may advantageously be made up in general of ingredients similar to those used in the first coating, preferably has the ingredients in different proportions, for example the rubber, filler and resin may be in nearly equal amounts, the resin somewhat predominating. The proportion of solvent in this composition is relatively small so that a cement having a high viscosity is produced and having, because of the high resin content, the requisite tackiness. While rosin (colophony) or other resins may be used to produce a practicable degree of tackiness, I have found that in order to produce the requisite high degree of tackiness Burgundy pitch is particularly desirable as the resin content of the second coating. The solvent employed in the second coating is preferably one that will quickly evaporate substantially completely at ordinary room temperature, preferably a hydrocarbon solvent or naphtha which is substantially free from the higher boiling point hydrocarbons usually found in solvent naphthas, so that it quickly evaporates substantially completely. The composition for the second coating is applied to the strip while cold, that is at normal room temperature, the coating being very thick compared with the thickness of the first coat. As soon as the highly viscous and heavy second coating is applied to the strip, the strip is exposed to the air and the highly volatile solvent begins to evaporate from the

immediate use while the coating is fresh and is preferably so used, the time during which it may be used is non-critical so that if the operator leaves his work for a time, even for an hour or more, the exposed portion of the coated strip is still tacky and suitable for immediate use when he returns to work.

The fabric having the preliminary coating above described is non-tacky and remains so permanently under all atmospheric conditions for an indefinite period.

Moreover, by the method provided by this invention the shoe manufacturer is saved the expense of heating the strip, the adhesion of the reinforcing material to the insole is not adversely affected by the subsequent toe steaming operation but rather is caused to adhere more firmly, and the loss due to deterioration of the coating on the coated strip by lapse of time is done away with. Because there is no heating and consequent shrinkage in length, a roll of a given yardage will reinforce more insoles than will a roll of the same length having a coating adapted for use with the prior hot process and applied by that process. Moreover, working conditions when the present method is practised are much improved over those incident to prior methods since objectionable heat and vapor are avoided.

In the drawings,

Fig. 1 illustrates the applying of a preliminary coating to the reinforcing material and drying it, a suitable coating apparatus being shown partly in longitudinal section and partly in elevation;

Fig. 2 illustrates the cutting of the coated web into strips and the forming of the strips into rolls, suitable stripping and winding apparatus being shown partly in perspective and partly in section;

Fig. 3 illustrates the steps of applying a second coating to the strip as it is drawn from the roll, the application of the insole to the coated strip, and the severing of a portion of the strip of sufficient length to reinforce the insole, suitable coating and ... ting apparatus being shown partly in s... tion and partly in elevation;

Fig. 4 illustrates the operation of form...

insoles in which a coating of cement is applied to a strip of precoated canvas and the strip employed to reinforce insoles, the preliminary coating may be applied by apparatus such as that illustrated in Fig. 1. The duck, in a web 8 of usual width, is drawn from a supply 10 over a rubber-covered roll 12, the web 8 drawn from the supply being maintained under tension by a suitable friction device such as a cord 14 held frictionally against a pulley on the shaft of the supply roll 10 by a suitable weight 16. Over the rubber-covered roll 12 is a stripper 18 arranged for adjustment toward and from the roll by screws 20 arranged at the opposite ends of the stripper.

It has been found in practice that a suitable cement composition for use in applying the first coating may have the following composition:

Rubber	65 pounds
Zinc oxide	41 pounds
Burgundy pitch	22 pounds
Naphtha	43 gallons

The cement used in coating the material is contained in a receptacle 22 arranged on trunnions so that periodically a supply of cement 24 may be dumped on to the duck before it reaches the stripper, the motion of the duck carrying the cement 24 into the bite between the roll 12 and the stripper 18 and maintaining it there during the coating operation. At each end of the stripper 18 is a plate 26 fitted to the stripper and to the roll and arranged so as to prevent the cement from spreading laterally beyond the edge of the web. After leaving the stripper the web 8 passes over a heat conducting supporting plate 28 beneath which is arranged a series of steam pipes 30 by which the plate 28 and consequently the web are heated to dry the cement, that is, to drive off the volatile rubber solvent which the cement contains. Over the steam pipes 30 is arranged a hood 32 for conducting off the vapor of the rubber solvent given off by the cement in the early stages of the drying operation. Further drying of the cement after the web leaves the hood is effected by a series of steam pipes 34. The web then passes over web, artificial heat is employed to drive off the solvent, the nature of the solvent is relatively unimportant, it being possible to employ the cheaper hydrocarbon solvents such as gasoline or low test naphtha with success. The coating thus applied is preferably quite thin, the objects of its use being to fill the pores of the duck so that it will not absorb too much of the second coating, to cement down the loose fibers of the duck, to prevent ravelling of the duck when it is cut into strips, and to afford a surface to which the second coating later applied will readily stick. Another important function of the first coating is to provide on the strip a material which will quickly absorb solvent from the second coating later applied to the strip, thereby quickly rendering the second coating tacky, and which will prevent the cementing material in the solvent from being absorbed by the first coating or by the fabric.

The roll 46 of coated duck is next taken to a stripping machine (Fig. 2) where the coated web is carried around a metal roll 48 beneath which is arranged a series of cutting disks 50 which are arranged for relative adjustment to vary the width and number of strips into which the web is cut. The cutters 50 are pressed against the roll 48 with sufficient pressure to cause the web to be cut into separate strips 52 which are wound into separable rolls 54. Preferably the cutters 50 at each end of the roll 48 are arranged just inside the selvage of the web so that the rough and irregular edges of the web will be removed and each of the strips formed by the stripping machine will have straight edges and will be of uniform width. The discarded marginal portion which is removed from one side of the web is illustrated at 56 in Fig. 2, it being understood, of course, that there is a similar marginal portion removed from the opposite side of the web.

For the second and final coating of cement to be applied to the strips 52, the following composition has been found suitable in practice:

dominating. The proportion of solvent in this composition is relatively small so that a cement having a high viscosity is produced and having, because of the high resin content, the requisite tackiness. While rosin (colophony) or other resins may be used to produce a practicable degree of tackiness, I have found that in order to produce the requisite high degree of tackiness Burgundy pitch is particularly desirable as the resin content of the second coating. The solvent employed in the second coating is preferably one that will quickly evaporate substantially completely at ordinary room temperature, preferably a hydrocarbon solvent or naphtha which is substantially free from the higher boiling point hydrocarbons usually found in solvent naphthas, so that it quickly evaporates substantially completely. The composition for the second coating is applied to the strip while cold, that is at normal room temperature, the coating being very thick compared with the thickness of the first coat. As soon as the highly viscous and heavy second coating is applied to the strip, the strip is exposed to the air and the highly volatile solvent begins to evaporate from the exposed surface. At the same time the first coating is absorbing the solvent from the second coating so that in a very short time, in fact in a few seconds, sufficient solvent has been removed from the second coating to render it tacky instead of slimy or slippery, and hence it is in suitable condition for the application to the insole. Since the two coatings are of a similar nature, the rubber solvent absorbed by the first coating from the second coating softens the first coating so that the two coatings cohere and firm adhesion between strip and the insole is assured. While the coated strip is thus adapted for for use with the prior hot process and applied by that process. Moreover, working conditions when the present method is practised are much improved over those incident to prior methods since objectionable heat and vapor are avoided.

In the drawings,

Fig. 1 illustrates the applying of a preliminary coating to the reinforcing material and drying it, a suitable coating apparatus being shown partly in longitudinal section and partly in elevation;

Fig. 2 illustrates the cutting of the coated web into strips and the forming of the strips into rolls, suitable stripping and winding apparatus being shown partly in perspective and partly in section;

Fig. 3 illustrates the steps of applying a second coating to the strip as it is drawn from the roll, the application of the insole to the coated strip, and the severing of a portion of the strip of sufficient length to reinforce the insole, suitable coating and ... ting apparatus being shown partly in section and partly in elevation;

Fig. 4 illustrates the operation of forming the cut-off portion of the material against the inner face of the rib of the insole and against the bottom of the insole, the figure being a perspective view of the insole, reinforcing material, and hand tool employed for the purpose; and

Fig. 5 illustrates the operation of further forming the reinforcing material to the insole and trimming off the excess of reinforcing material flush with the outer edge of the rib of the insole, the figure being a view, partly in section and partly in elevation, of the operating instrumentalities of an insole reinforcing machine.

In the illus rated method of reinforcing

The cement used in coating the material is contained in a receptacle 22 arranged on trunnions so that periodically a supply of cement 24 may be dumped on to the duck before it reaches the stripper, the motion of the duck carrying the cement 24 into the bite between the roll 12 and the stripper 18 and maintaining it there during the coating operation. At each end of the stripper 18 is a plate 26 fitted to the stripper and to the roll and arranged so as to prevent the cement from spreading laterally beyond the edge of the web. After leaving the stripper the web 8 passes over a heat conducting supporting plate 28 beneath which is arranged a series of steam pipes 30 by which the plate 28 and consequently the web are heated to dry the cement, that is, to drive off the volatile rubber solvent which the cement contains. Over the steam pipes 30 is arranged a hood 32 for conducting off the vapor of the rubber solvent given off by the cement in the early stages of the drying operation. Further drying of the cement after the web leaves the hood is effected by a series of steam pipes 34. The web then passes over a spreader bar 36, around a felt covered cylindrical roll 38 which is preferably power driven, and beneath a partition 40 which protects it at this stage from the heat of the steam pipes 30, 34. During the passage of the web beneath the partition 40 a blast of air is blown against its coated surface from an air duct 42 to cool and further dry the coating. The web is then wound on a shaft 44 into a roll 46, the shaft 44 being also driven in any suitable manner to assist the roll 38 in drawing the web through the coating apparatus.

Since, in drying the first coating on the disks 50 which are arranged for relative adjustment to vary the width and number of strips into which the web is cut. The cutters 50 are pressed against the roll 48 with sufficient pressure to cause the web to be cut into separate strips 52 which are wound into separable rolls 54. Preferably the cutters 50 at each end of the roll 48 are arranged just inside the selvage of the web so that the rough and irregular edges of the web will be removed and each of the strips formed by the stripping machine will have straight edges and will be of uniform width. The discarded marginal portion which is removed from one side of the web is illustrated at 56 in Fig. 2, it being understood, of course that there is a similar marginal portion removed from the opposite side of the web.

For the second and final coating of cement to be applied to the strips 52, the following composition has been found suitable in practice:

Rubber	48 pounds
Zinc oxide	48 pounds
Burgundy pitch	60 pounds
Naphtha (high test)	14 gallons

The high test naphtha referred to in this composition is preferably that which distills over between 165° F. and 238° F., the specific gravity of the naphtha being about 65° Bé.

The second coating may be applied to the strips 52 by means of apparatus illustrated in Fig. 3. For this purpose I prefer to employ the coating apparatus disclosed in Letters Patent of the United States No. 1,771,388 granted July 22, 1930, on an application filed in the name of Russell K. Nash. One of the rolls 54 is suitably supported for rotation on a bracket 58 and passed beneath a body of

cement 60 in a nozzle 62. By drawing the strip 52 through the nozzle 62 a suitable heavy coating of cement is applied thereto, the thickness of the coating being determined by a stripper 64 and a deflector 66. In drawing the strip through this apparatus, the extreme edge portions 68 of the strip are uncoated with cement, as illustrated in Fig. 4, certain parts of the apparatus, as explained in the Letters Patent above referred to, being so constructed and arranged that the marginal portions of the strip are protected from contact with the cement. Since the second coating is viscous and does not extend to the edge of the strip, the coating is not apt to flow over the edge and get on the operator's table so that the stickiness and mussiness incident to the handling of a strip the coating of which extends to its edge is avoided.

A suitable length of the coated strip, say three or four feet, is drawn out upon a table 70 to give the strip a brief exposure to the air and allow the first coating to absorb solvent from the second coating, the coating material and strip being of course at normal room temperature. A ribbed insole 72 is laid, ribbed face down, on the strip 52, the end of the strip being located approximately at the breast line of the insole where the rib usually ends. The end portion of the strip 52 and the insole are grasped by the operator, a further portion of the strip drawn through the coating apparatus, and the end portion of the strip cut off substantially flush with the end of the insole 72, for example, by means of shears 74. By manipulating the insole and strip in this manner the operator obtains a hold on the strip to draw it through the cementer while avoiding contact of his fingers with the coating on the strip. The insole 72 with a piece of reinforcing material adhering to it is then turned over and the reinforcing material is formed against the inner face of the lip 76 of the insole by suitable means, for example by employing a hand tool 78 as illustrated in Fig. 4, the reinforcing operation being completed by trimming off the excess of reinforcing material which extends beyond the outer edge of the lip 76. For forming the reinforcing ma-

In the operation of this machine, the fact that the material of the second coating does not extend to the edge of the strip is of material advantage, since when a strip thus coated is used there is much less liability of the trimming machine becoming gummed up with the cement on the excess of material trimmed off by the machine. Before employing a reinforcing machine of this type, it is customary to form the reinforcing material preliminarily to the insole by means of a hand tool such as 78, but this hand forming step is not essential and, under proper conditions, may be omitted.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, a resin, and a filler to a strip of reinforcing material at room temperature and substantially immediately and with the cement still at room temperature applying to each other a portion of the coated strip and an insole which is to be reinforced.

2. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, a resin, and a filler to a strip of reinforcing material at room temperature, substantially immediately and with the cement still at room temperature applying to each other the end portion of the coated strip and an insole which is to be reinforced, and severing the portion of the strip applied to the insole from the remainder of the strip.

3. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, rosin and a filler to a strip of reinforcing fabric at room temperature, substantially immediately and with the cement still at room temperature applying to each other the end portion of the coated fabric and the insole which is to be reinforced, and severing the portion of the strip applied to the insole from the remainder of the strip.

4. That improvement in methods of rein-

inforcing fabric provided with a dry coating of a cement having a substantial rubber content, a coating of adhesive containing a relatively large amount of rubber and a resin, and of such a character that it will be effective even when freshly applied to cause quick adhesion of the fabric and the leather of the insoles, and applying to each other, still at room temperature, a portion of the coated fabric and the insole to be reinforced.

6. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, a resin, and a filler to a strip of reinforcing material at room temperature, substantially immediately and with the adhesive still at room temperature applying to each other the end portion of the coated strip and a lipped insole which is to be reinforced, severing the portion of the strip applied to the insole from the remainder of the strip, and forming the reinforcing material to the lip of the insole without the use of heat.

7. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, Burgundy pitch and a filler at room temperature to a strip of reinforcing material provided with a dry coating of a cement having a substantial rubber content, substantially immediately and with the adhesive still at room temperature applying to each other the end portion of the coated strip and a lipped insole to be reinforced, severing the portion of the strip applied to the insole from the remainder of the strip, and forming the reinforcing material to the lip of the insole without the application of heat.

In testimony whereof I have signed my name to this specification.

ELMER A. ELLIS.

three or four feet, is drawn out upon a table 70 to give the strip a brief exposure to the air and allow the first coating to absorb solvent from the second coating, the coating material and strip being of course at normal room temperature. A ribbed insole 72 is laid, ribbed face down, on the strip 52, the end of the strip being located approximately at the breast line of the insole where the rib usually ends. The end portion of the strip 52 and the insole are grasped by the operator, a further portion of the strip drawn through the coating apparatus, and the end portion of the strip cut off substantially flush with the end of the insole 72, for example, by means of shears 74. By manipulating the insole and strip in this manner the operator obtains a hold on the strip to draw it through the cementer while avoiding contact of his fingers with the coating on the strip. The insole 72 with a piece of reinforcing material adhering to it is then turned over and the reinforcing material is formed against the inner face of the lip 76 of the insole by suitable means, for example by employing a hand tool 78 as illustrated in Fig. 4, the reinforcing operation being completed by trimming off the excess of reinforcing material which extends beyond the outer edge of the lip 76. For forming the reinforcing material to the lip and trimming it off I prefer to employ an insole reinforcing machine such as that disclosed in Letters Patent of the United States No. 1,726,800, granted September 3, 1929, on application of Frederic E. Bertrand. In the operation of this machine, as illustrated in Fig. 5, the marginal portion of the insole is held between driven rolls 80, 82, the reinforcing material is tucked into the angle between the rib and the bottom of the insole by a driven roll 84, and the portion of the reinforcing material which extends beyond the outer edge of the lip is trimmed away by a rapidly rotated disk knife 86.

amounts of rubber, a resin, and a filler to a strip of reinforcing material at room temperature and substantially immediately and with the cement still at room temperature applying to each other a portion of the coated strip and an insole which is to be reinforced.

2. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, a resin, and a filler to a strip of reinforcing material at room temperature, substantially immediately and with the cement still at room temperature applying to each other the end portion of the coated strip and an insole which is to be reinforced, and severing the portion of the strip applied to the insole from the remainder of the strip.

3. That improvement in methods of reinforcing insoles which comprises applying a coating of adhesive containing substantial amounts of rubber, rosin and a filler to a strip of reinforcing fabric at room temperature, substantially immediately and with the cement still at room temperature applying to each other the end portion of the coated fabric and the insole which is to be reinforced, and severing the portion of the strip applied to the insole from the remainder of the strip.

4. That improvement in methods of reinforcing insoles which comprises applying, at room temperature, to a strip of reinforcing material provided with a dry coating of a cement having a substantial rubber content, a coating of adhesive containing a relatively large amount of rubber and of such a character that it will be effective even when freshly applied to cause quick adhesion of the reinforcing material and the material of the insole, and applying to each other, still at room temperature, a portion of the coated strip and the insole to be reinforced.

5. That improvement in methods of reinforcing leather insoles which comprises applying, at room temperature, to a strip of re-

PLAINTIFF'S EXHIBIT 2.

This Agreement made this 19th day of January, 1932 by and between the Boston Blacking Company, Inc., having a principal place of business at Boston, Massachusetts, hereinafter called the Licensor, and the Pepperell Manufacturing Company, having a principal place of business at Boston, Massachusetts, hereinafter called the Licensee; Witnesseth:

Whereas the Licensor represents that it is the sole and exclusive owner of and has the sole and exclusive right to grant licenses under Letters Patent of the United States No. 1,830,428, dated November 3, 1931, issued to Elmer A. Ellis, concerning the manufacture and use of adhesive insole reinforcing fabric; and

Whereas the Licensee manufactures fabric suitable for such use and is desirous of acquiring from the Licensor certain rights as hereinafter set forth under the Letters Patent above mentioned;

Now, Therefore, for and in consideration of the mutual covenants herein contained and in consideration of the sum of one dollar ($1.00) and other good and valuable considerations each to the other in hand paid, receipt whereof is hereby acknowledged, the parties hereto have covenanted and agreed and do hereby covenant and agree as follows:

1. The Licensor has given and granted and by these presents does give and grant unto the Licensee a non-exclusive right and license for the United States of America to make, use and sell for use or resale by others base-coated fabric for insole reinforcement under the said Letters Patent No. 1,830,428, and any reissue or reissues thereof, but for non-solvent second coatings only. The right and license hereby granted shall be effective for the life of the said patent or any reissue or reissues thereof.

2. The Licensee agrees to pay to the Licensor as consideration for this license agreement the sum of for every five-sixths (5/6ths) of a square yard base-coated and sold by the Licensee for use with non-solvent second coatings in the reinforcement of insoles under said Letters Patent.

3. The Licensee admits for the purpose of and during the term of the life of this agreement, but no longer, the validity of the Letters Patent under which it is hereby licensed.

4. It is agreed that the Licensor's judgment and determination as to whether or not the acts of manufacture, sale, or use by any unlicensed person or corporation involve infringement of the claims of said Letters Patent or any of them shall be final, and the failure on the part of the Licensor to institute an infringement suit against the person or corporation allegedly infringing within six calendar months after notice of such alleged infringement by the Licensee in writing to the Licensor given shall be deemed by the Licensee an admission by the Licensor that the subject matter in question is free of infringement of the claims of said Letters Patent and shall be free to the Licensee, any provisions of this agreement to the contrary notwithstanding.

5. The Licensee shall, upon notice given as in the preceding paragraph provided, withhold royalty payments thereafter accruing hereunder so long as a competent court shall not have found for the Licensor.

6. Any notice required or authorized to be given by either party to the other may be served by letter, postage prepaid, addressed to the other at its last known place of business, and deposited in an United States post office or mail box for mailing and such notice shall be deemed to have been served upon the party to whom it is addressed at the expiration of four days from the time such notice is so deposited.

7. This agreement is executed in the Commonwealth of Massachusetts and pursuant to its laws, and all differences or disputes as to any questions concerning the execution, validity, interpretation, performance, and/or effect of this agreement shall be resolved in accordance with the laws of said Commonwealth.

8. The Licensee agrees to keep separate books of account, showing the number of square yards of fabric base-coated and sold in accordance herewith, and will on or before the twenty-fifth days

of July, October, January and April of each year, during which this license agreement remains in full force and effect, render to the Licensor a full and true statement, sworn to by an officer of the Licensee if requested, of the square yardage so base-coated and sold in accordance herewith together with a statement of the royalty sums payable thereon and at the time of rendering such statement pay to the Licensor the amount shown to be due by such statements.

9. The Licensee agrees to permit reputable certified public accountants, not regular employes of the Licensor, when representing the Licensor, at all reasonable times to inspect its books of account covering the various operations and calculations incident to this agreement, provided, however, that said accountants shall not have access to accounts pertaining to matters not covered by this agreement, and provided that the extracts or notes taken by them shall relate exclusively to the subject matter of this agreement, and shall contain no reference to names or addresses of customers, or other extraneous matters and provided that, if asked for in writing by the Licensee, said accountants shall give to said Licensee a written statement that any information obtained which does not directly pertain to the operations and calculations incident to this agreement will be kept confidential and will not be imparted to the Licensor or to any one else and that information obtained which does relate directly to the operations and calculations incident to this agreement will be imparted only to their principal.

10. The Licensor agrees not to license others under the above mentioned Letters Patent or any reissue or reissues thereof on terms more favorable than those herein provided.

11. The parties hereto agree that the terms of this agreement shall be binding upon their successors and assigns.

In Witness Whereof the parties hereto have duly executed this instrument in duplicate the day and year first above written.

BOSTON BLACKING COMPANY, INC.
By (Sgd.) H. Webb Hyde
Vice President
(SEAL)

PEPPERELL MANUFACTURING COMPANY
by (Sgd.) A. Coolidge
Vice President.

PLAINTIFF'S EXHIBIT 3.

This Agreement made this 15th day of April, 1932, between the Boston Blacking Company, Inc., a Massachusetts corporation, of Cambridge, Massachusetts, (hereinafter called the Licensor) and the H-B Products Company, a Massachusetts corporation, of Brockton, Massachusetts, (hereinafter called the Licensee),

Witnesseth:

That the parties hereto in consideration of the sum of One Dollar ($1.00) and other valuable considerations by each to the other in hand paid, the receipt of which is hereby acknowledged, hereby covenant and agree each with the other as follows:—

1. The Licensor hereby grants to the Licensee a personal, non-assignable, non-exclusive license under United States Letters Patent No. 1,830,428, dated November 3, 1931, to coat or cause to be coated and put out machinery for performing a latex second coating, but not to put out machinery for base-coating, upon material of the kind known in the trade as Gem Duck during the term of said Letters Patent or any reissues thereof. It is understood and agreed that no license is hereby granted under said Letters Patent or otherwise to coat Gem Duck or other material or to put out machinery therefor by what is known as the Bostick Process, meaning thereby a solvent second coating.

2. The Licensee shall pay to the Licensor as royalty for the license hereby granted the sum of for each yard of material thirty-six inches (36") long and thirty

inches (30") wide base-coated by or for the Licensee and which is subsequently, either by the Licensee or by others, provided with a latex second coating, which royalty shall be payable on the 15th days of March, June, September and December in each year for material base-coated and provided with a latex second coating during the three calendar months immediately preceding.

3. The Licensee acknowledges the validity of and the title of the Licensor to said Letters Patent No. 1,830,428 and agrees that it will not infringe said Letters Patent or contest the validity thereof or the title of the Licensor thereto.

4. This agreement is executed in the Commonwealth of Massachusetts and pursuant to its laws, and all difficulties or disputes as to any questions concerning the execution, validity, interpretation, performance, and/or effect of this agreement shall be resolved in accordance with the laws of said Commonwealth.

5. The Licensee agrees to keep separate books of account showing the number of web yards of fabric base-coated and sold in accordance herewith and will on or before the fifteenth days of March, June, September and December render to the Licensor a full and true statement, sworn to by an officer of the Licensee, if requested, of the web yardage so base-coated and sold in accordance herewith, together with a statement of the royalty sums payable thereon, and at the time of rendering such statement pay to the Licensor the amount shown to be due by said statement. It shall be conclusively presumed that said fabric is subsequently, either by the Licensee or by others, provided with a latex second coating unless the Licensee shall furnish the Licensor affirmative evidence as to the number of yards not so second coated and the type of second coating.

6. It is agreed that the Licensor and the Licensee shall each make such price on its own product embodying the inventions described and claimed in said Letters Patent as the respective seller shall desire at any time, except that in no case shall the net sales price of either the Licensor or the Licensee to any customer with respect to base-coated Gem Duck provided with a latex second

coating be less than one and one-half cents (1½¢) below the sales price of the Licensor for Gem Duck coated by the Licensor's Bostick Process. The quantity discount, the cash discount and the freight allowance shall be the same for both the Licensor and Licensee.

7. The word "price" as used in Article 6 with reference to merchandise embodying the inventions described in said Letters Patent shall be deemed to include the base-coated duck per web yard, slit to the customer's requirements, and the necessary amount of Latex second coating that is customarily applied to the particular duck in question.

8. The license hereby granted is terminated in the event of a final decree declaring said Letters Patent invalid or in the event of a final decree declaring that said Letters Patent does not read upon a method of reinforcing insoles in which latex is employed for the second coat or in the event the Licensor shall not within six (6) months after written notice by the Licensee to the Licensor prosecute infringement proceedings against one who in the opinion of both the Licensor and the Licensee practices identically the same method of reinforcing insoles which the Licensee is licensed to practice hereunder and is then practicing hereunder.

9. The Licensor agrees that if it shall grant to any other Licensee a greater differential it will grant to the Licensee herein the same differential upon the same terms and conditions.

10. The parties hereto agree that the terms of this agreement shall be binding upon their successors and assigns, as the case may be.

In Witness Whereof the parties hereto have duly executed this instrument in duplicate the day and year first above written.

BOSTON BLACKING COMPANY, INC.

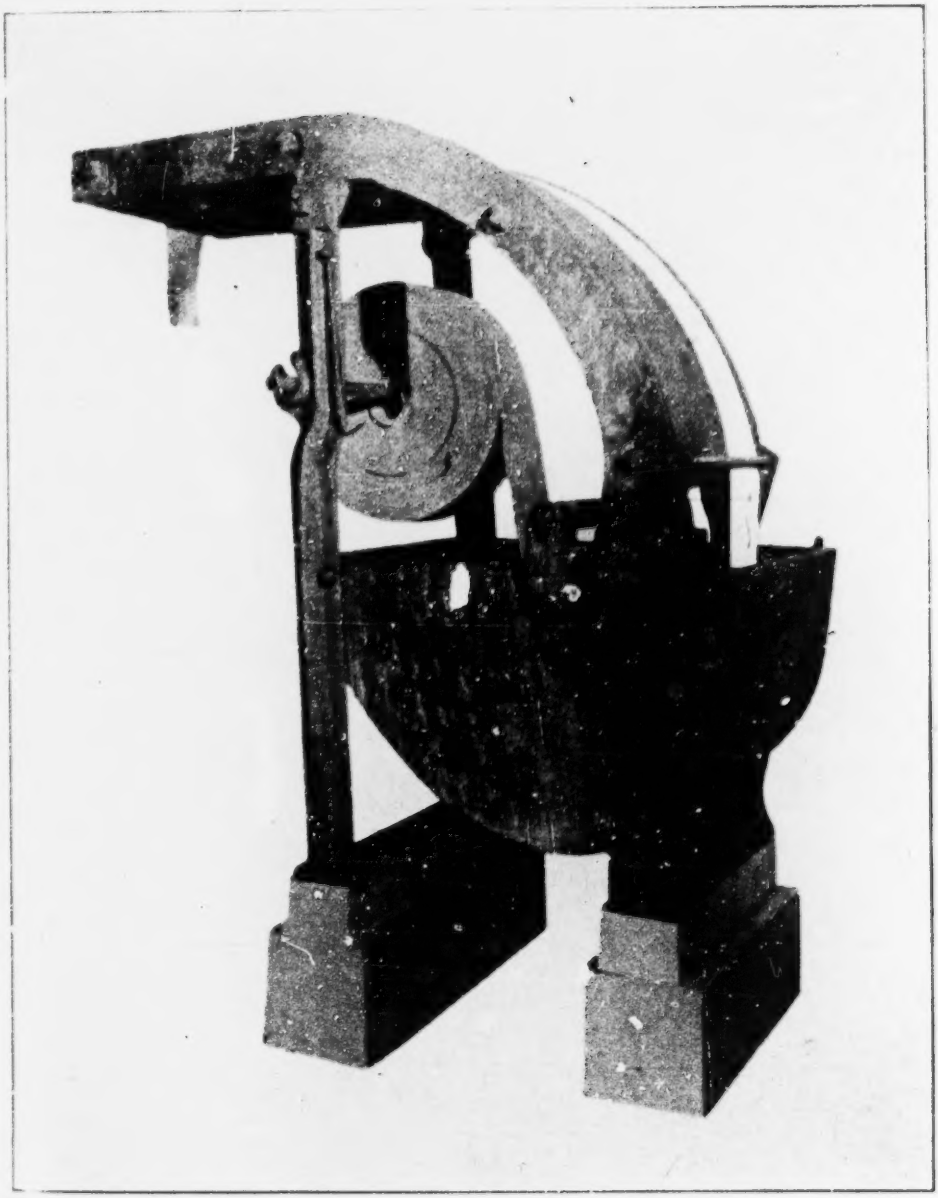
By (Sgd.) Henry Webb Hyde

V. Pres. & Gen. Manager

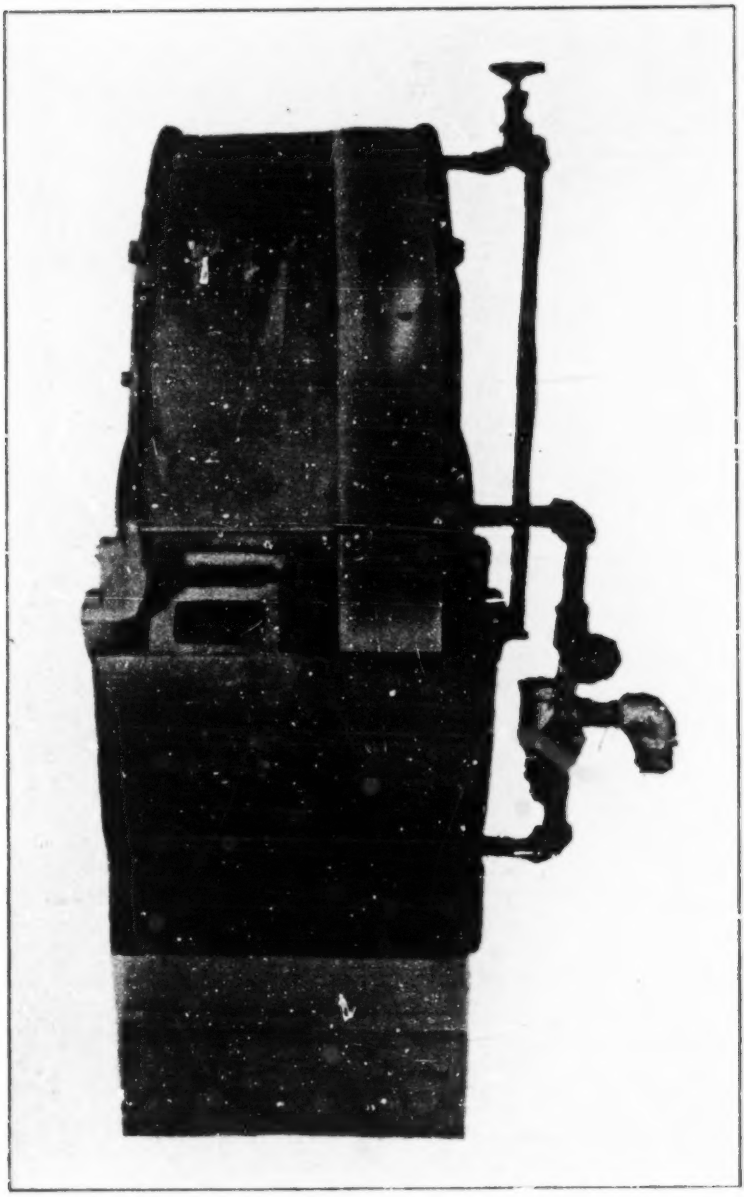
H-B PRODUCTS COMPANY,

By (Sgd.) Lawrence E. Anderson

PLAINTIFF'S EXHIBIT 4a.



PLAINTIFF'S EXHIBIT 4b.



PLAINTIFF'S EXHIBIT 19.

RESULTS OF PULL TESTS

10-5-39

Series I

Insole No.	Average Pull
2.	4.8
4.	5.3
6.	5.9
8.	6.8
10.	6.4
12.	5.3
14.	4.9
16.	5.6
18.	5.0
20.	6.0
	Ave 5.6

Series II

Insole No.	Average Pull
2.	3.7
4.	3.8
7.	4.5
8.	4.0
10.	4.8
11.	3.7
12.	4.4
16.	4.0
18.	4.3
20.	4.0
	Ave 4.1

Series VII

Insole No.	Average Pull
2.	7.0
4.	4.4
6.	5.5
8.	4.3
10.	3.8
12.	6.0
14.	5.7
16.	5.6
18.	6.7
20.	5.6
	Ave 5.5

Series VIII

Insole No.	Average Pull
1.	6.0
3.	4.6
5.	3.8
7.	4.3
9.	3.8
11.	4.8
13.	4.3
15.	4.8
17.	5.0
19.	6.0
	Ave 4.7

JOHN B. GREGORY

Series III

Insole No.	Average Pull
2.	5.4
4.	6.1
6.	5.5
8.	7.0
10.	6.5
12.	6.1
14.	7.2
16.	8.0
18.	8.6
20.	7.8
	Ave 6.8

Series IV

Insole No.	Average Pull
2.	7.5
4.	5.5
6.	5.8
8.	6.5
10.	5.2
12.	5.7
14.	6.0
16.	7.4
18.	5.3
20.	5.1
	Ave 6.0

Series V

Insole No.	Average Pull
1.	4.6
3.	6.3
4.	6.4
5.	6.1
7.	6.3
9.	5.7
13.	4.7
15.	6.8
17.	5.5
19.	5.8
	Ave 5.8

Series VI

Insole No.	Average Pull
1.	5.2
3.	4.3
5.	4.8
7.	5.3
9.	5.5
11.	8.6
13.	6.0
15.	3.8
17.	5.0
19.	5.8
	Ave 5.4

JOHN B. GREGORY

PLAINTIFF'S

INTER-PARTES

Cambridge, Mass.,

OPERATOR: PERKINS

No Heat

Series I (D 219)

Insole No.	Average Pull
2	4.8 lbs.
4	5.3
6	5.9
8	6.8
10	6.4
12	5.3
14	4.9
16	5.6
18	5.0
20	6.0

Average 5.6

115° F.

Series VII (D 219)

Insole No.	Average Pull
2	7.0 lbs.
4	4.4
6	5.5
8	4.3
10	3.8
12	6.0
14	5.7
16	5.6
18	6.7
20	5.6

Average 5.5

Series III (No. 1)

Insole No.	Average Pull
2	5.4 lbs.
4	6.1
6	5.5
8	7.0
10	6.5
12	6.1
14	7.2
16	8.0
18	8.6
20	7.8

Average 6.8

Series V (No. 1)

Insole No.	Average Pull
1	4.6 lbs.
3	6.3
4	6.4
5	6.1
7	6.3
9	5.7
13	4.7
15	6.8
17	5.5
19	5.8

Average 5.8

EXHIBIT 20.

TESTS

September 5, 1939.

OPERATOR: THEBEAU

No Heat

Series II (D 219)

Insole No.	Average Pull
2	3.7 lbs.
4	3.8
7	4.5
8	4.0
10	4.8
11	3.7
12	4.4
16	4.0
18	4.3
20	4.0

Average 4.1

115° F.

Series VIII (D 219)

Insole No.	Average Pull
1	6.0 lbs.
3	4.6
5	3.8
7	4.3
9	3.8
11	4.8
13	4.3
15	4.8
17	5.0
19	6.0

Average 4.7

Series IV (No. 1)

Insole No.	Average Pull
2	7.5 lbs.
4	5.5
6	5.8
8	6.5
10	5.2
12	5.7
14	6.0
16	7.4
18	5.3
20	5.1

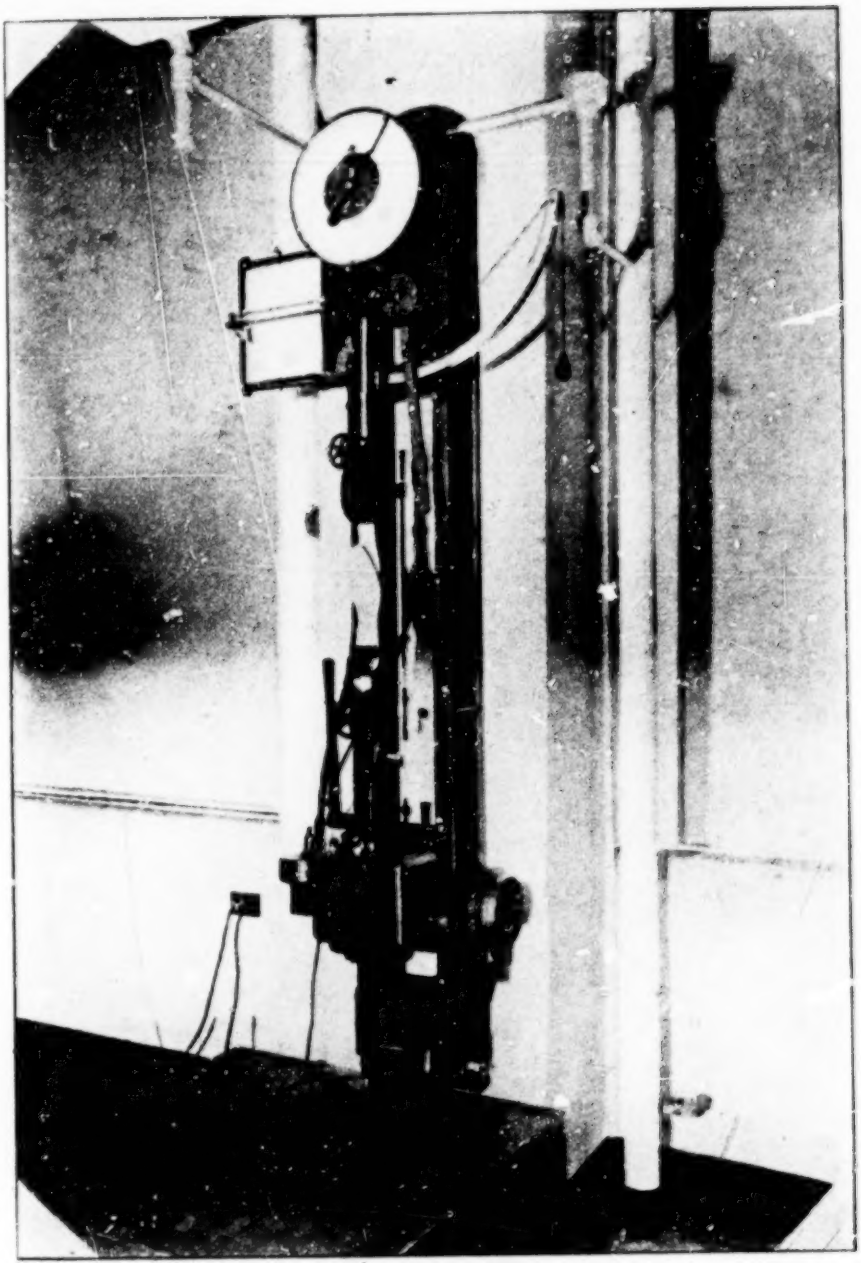
Average 6.0

Series VI (No. 1)

Insole No.	Average Pull
1	5.2 lbs.
3	4.3
5	4.[illegible]
7	5.3
9	5.5
11	8.6
13	6.0
15	3.8
17	5.0
19	5.8

Average 5.4

PLAINTIFF'S EXHIBIT 21.



DEFENDANTS' EXHIBIT C.

[On Invoice of Clifton Mfg. Company, Inc., Mattapan, Boston, Mass.]

Invoice No. BG 15
Date April 22, 1938

Pkg. Marks Customer's Order No. Salesman

Sold to Magic Tape Co., Otis Street, Medford, Mass.

Terms 2% 10th prox Net 30
Via Beavers

Shipped to Commonwealth Shoe & Leather Co., Whitman, Mass.,

1116¼ yds. Their Duck Coated Bale No. B8474 Cut 8

@ .02 $22.32

H-B Product
10 Cartons Order Completed

Mail all Remittances to Mattapan Office

DEFENDANTS' EXHIBIT F.

SUMMARY OF RESULTS OF TESTS

B. B. Chemical Co.

Oct. 5, 1939

Operator	Compound	Cold Test Lbs. Pull		Hot Test Llbs. Pull	
Perkins	No. 219	5.6	Time of operation of test 2 min. 7 sec.	5.5	Time of operation of test 2 min. (approx.) 1 min. 35 sec. (recorded)
		Series I		Series VII	
"	No. 1	6.8	2 min. 4 sec.	5.8	1 min. 48 sec.
		Series III		Series V	
Thebeau	No. 219	4.1	2 min. 57 sec.	4.7	2 min. 47 sec.
		Series II		Series VIII	
"	No. 1	6.0	2 min. 54 sec.	5.4	2 min. 32 sec
		Series IV		Series VI	

Note: Elapsed time between beginning of test and determination of pound pull on Scott tester was 11 minutes in every case, with one exception in which the time was 9 minutes.

CLERK'S CERTIFICATE.

UNITED STATES OF AMERICA,

DISTRICT OF MASSACHUSETT, ss.

I, John E. Gilman, Jr., Deputy Clerk of the District Court of the United States for the District of Massachusetts, and during the temporary absence of the clerk in charge of the affairs of the clerk's office of said court, and the custodian of its files and records, do hereby certify that the foregoing is the transcript of the record on the appeal of the plaintiff, including true copies of such proofs, entries and papers on file as have been designated by

the plaintiff as constituting the record on appeal of the plaintiff in the cause entitled,

No. 4642, EQUITY DOCKET,

B. B. CHEMICAL CO., Plaintiff,

v.

ELMER A. ELLIS ET AL., Defendants,

in said District Court determined.

In testimony whereof, I hereunto set my hand and affix the seal of said District Court, at Boston, in said District, this ninth day of September, A. D. 1940.

JOHN E. GILMAN, JR.,

[SEAL] *Deputy Clerk.*

[MEMORANDUM. Orders of enlargement of time for docketing case to, and including, September 10, 1940 are here omitted. A. I. CHARRON, *Clerk.*]

[fol. 373] **Proceedings in Circuit Court of Appeals**

On January 8, 1941, this cause came on to be heard, and was fully heard by the court, Honorable Calvert Magruder and Honorable John C. Mahoney, Circuit Judges, and Honorable John P. Hartigan, District Judge, sitting.

Thereafter, to wit, on February 21, 1941, the following Opinion of the Court and concurring opinion were filed:

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE FIRST CIRCUIT, OCTOBER TERM, 1940

No. 3626

B. B. CHEMICAL CO., Plaintiff, Appellant,

v.

ELMER A. ELLIS et al., Defendants, Appellees

Appeal from the District Court of the United States for the District of Massachusetts

(32 F. Supp. 690)

Before Magruder, Mahoney and Hartigan, JJ.

OPINION OF THE COURT—February 21, 1941

MAHONEY, J.:

The appeal in this case is from the final decree of the District Court dismissing the bill of complaint in a suit brought to restrain the defendant from infringing patent No. 1,830,428. The patent was applied for by the defendant, Elmer A. Ellis, November 8, 1929, and the application was assigned to the plaintiff for $8,000. On November 3, 1931, the patent was issued pursuant to the application and is now owned by the plaintiff.

The defendants are Elmer A. Ellis, the inventor of the patented process and the plaintiff's assignor, and the Magic Tape Company. The latter is a corporation with outstanding capital stock of twenty-five shares, of which the defendant Ellis and his wife own twenty-four. The defendants are charged with infringing the plaintiff's patent by selling materials to shoe manufacturers for use in an allegedly infringing process.

[fol. 374] The patent relates to the manufacture of insoles for shoes. The specification describes the usual practices which formerly had been followed by shoe manufacturers in reinforcing the insoles. By the so-called "hot process", insoles were reinforced by cementing to them a textile fabric such as "gem" duck which had been coated with a thermoplastic material containing gutta percha or gutta siak and cut into strips of approximately the width of the insoles. To insure the proper adhesion of the fabric to the insole, this coat of thermoplastic material had to be heated to a very high temperature just prior to its application to the insole. The disadvantages of this process were that it had to be used while the coating was still hot and pliable and was difficult and dangerous for the operator to use.

The process known as the "cold process" consisted of the application to a strip of duck of a coating of ordinary fluid rubber cement containing a large proportion of solvent. In order for the coating to become tacky, i. e. sticky, and thus suitable for use, the strips were hung up in the factory to allow the solvent to evaporate. This took up a great deal of factory space and consumed an impracticable amount of time. Attempts to use a permanently tacky coating such as a surgeon's adhesive plaster were also unsuccessful as the strip, when coated, could not be rolled without sticking.

It was to overcome the disadvantages of these earlier processes that the defendant Ellis developed the process of the patent in suit. Claim 4 of the patent, the only claim in issue, is set forth in the margin.[1] In this process, a suitable fabric, such as "gem duck" is coated in the web with a cold rubber cement composition containing rubber, a resin and [fol. 375] a solvent, and capable of being rendered permanently non-tacky upon evaporation of the solvent and con-

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[1] "4. That improvement in methods of reinforcing insoles which comprises applying, at room temperature, to a strip of reinforcing material provided with a dry coating of a cement having a substantial rubber content, a coating of adhesive containing a relatively large amount of rubber and of such a character that it will be effective even when freshly applied to cause quick adhesion of the reinforcing material and the material of the insole, and applying to each other, still at room temperature, a portion of the coated strip and the insole to be reinforced."

sequent drying of the coating. The web is then heated to evaporate the solvent, thus rendering the coating non-tacky, and the web is cut into strips and wound into rolls which, because the cement is non-tacky, can be easily unwound. Just before the strip is applied to the insole in the reinforcing operation, a second, or top coat of rubber cement is applied to this pre-coated material. The absorption of this top coat by the pre-coated material and the evaporation of the solvent form a single reinforcing material which immediately adheres to the insole, at room temperature, and forms a satisfactory bond. The main improvement was the elimination of heat as a necessity in the reinforcing of insoles and the use of evaporation of cold, highly volatile rubber solvents of a tack-producing ingredient which permitted immediate use in reinforcing insoles when applied to a pre-coated fabric.

Claim 4 does not include specific reference to ingredients in its base or top coat. It provides only for a cement "having a substantial rubber content" and a top coat "containing a relatively high amount of rubber" with the proper adhesive qualities at room temperature. However, the specification suggested that a "suitable cement" for the base coat would contain rubber, zinc oxide as a filler, and a resinous material such as Burgundy pitch, the rubber and resin being dissolved in naphtha. The suggested top coat consists essentially of the same materials but in different proportions.

Between 1929 and 1932, the plaintiff used the above formula. Since 1932 it has used a pre-coat and has supplied to shoe manufacturers a top coat which includes a certain percentage of 60 per cent concentrated latex and other ingredients, the rubber content of the respective coats being about 35 per cent of the whole.

The plaintiff's manner of conducting its business was to supply shoe manufacturers with the pre-coated duck in strips of suitable width; if desired, the manufacturers supplied the duck and the plaintiff pre-coated and slit it. The [fol. 376] plaintiff also supplied the adhesive top coat to be applied to the pre-coated fabric at the shoe factory, just prior to the application of the reinforcing material to the insole. The plaintiff further supplied its own patented machines suitable for use in applying the adhesive to the pre-coated duck, such machines being and remaining the prop-

erty of the plaintiff. The plaintiff instructed the machine operators, serviced the machines, and advised and assisted in the reinforcing operations. As compensation for the foregoing, the plaintiff made a single charge to the shoe manufacturer, at a rate per web yard of duck supplied to the manufacturer; and, if the manufacturer did not furnish the duck, the price of that material was added to the charge. The adhesives used by the plaintiff in pre-coating have all had a large rubber content but were made according to different formulae, with special reference to the purpose for which the material was to be used. The plaintiff did not grant written licenses to shoe manufacturers to use its process, nor was any such license ever requested. Neither by notice nor agreement in any form with its customers did the plaintiff require them to use only the plaintiff's material. The plaintiff adopted the foregoing method of utilizing the patented process because it deemed it the most practical.

In 1932, the plaintiff gave to the Pepperell Manufacturing Company and to the H-B Products Company licenses to use the patented process on machines and materials using a latex or non-solvent top coat, at room temperature. The commercial practice of these licensees is substantially identical with that of the plaintiff.

In 1938 the defendant Ellis began to develop and promote a process for reinforcing insoles. The course of business adopted by his corporation followed closely that of the plaintiff.

The price per yard charged by the defendant, however, was somewhat lower than the plaintiff's price. In the machines which the defendants furnished their customers, there was a heating unit ostensibly to heat the latex solution which was used as a top coat. The District Judge found that with [fol. 377] the 60 watt unit in use prior to the suit, the temperature of the latex solution when applied to the pre-coated fabric was not above room temperature. Since the suit was brought, a larger unit was installed, and higher temperatures were obtained. But at no time did the temperature approach 290 degree Fahrenheit, necessary in the old hot process. The machines which the defendant loaned to its customers bore a plate stating that the process required the emulsion used to be kept at a heat of about 120 degrees. The trial judge found as a matter of practice, there was no pretense of maintaining this temperature.

The defendants' process is essentially like that of the plaintiff. The adhesive applied in pre-coating the duck follows closely the suggested formula in the plaintiff's specification. The defendants' top coat contains approximately 60 degrees concentrated latex and certain other ingredients. The defendants contend that their latex adhesives do not respond to the terms of claim 4, if that claim is properly limited, since latex is a colloidal dispersion in water while rubber cement is a colloidal dispersion in rubber solvent. It is agreed that both are adhesives, and the defendants' expert testified that they were certainly equivalents. It was conceded that both the latex and the rubber cement developed adhesion as the liquid vehicle evaporated. There was evidence to show that rubber in solvent as described in the patent co-acts in some way with the base coat but not exactly the same way as with the latex top coat, though the final result would be quite similar. The adhesive powers of the twice coated fabric in either case are due to evaporation and absorption of the liquid.

The defendants claim that their process does not infringe that of the plaintiff since their latex formula for the top coat is dissimilar to the rubber cement suggested in the specification and because heat is required in their process. During the trial the parties conducted tests using the defendants' process. It was found that no substantial benefit was derived from the use of heat and that the defendants' process worked satisfactorily at room temperature.

The District Court found that defendants' process in- [fol. 378] fringed that of the plaintiff because the latex top coat was equivalent to that suggested in the patent and because the terms of claim 4 permit the use of equivalent means. It further held that the defendants were infringers, but that the plaintiff was prevented from recovering because of its method of exploiting its patent. It therefore ordered the complaint dismissed.

In order to dispose of this case, the court must decide, first, whether the defendants' process infringes the plaintiff's process; second, whether, if so, the defendants are infringers, direct or contributory; and third, whether the plaintiff by its method of doing business will be denied relief against the defendants, providing the latter are determined to be infringers. No question of the validity of the plaintiff's patent is here involved. The defendants admitted its validity, and Mr. Ellis, being the plaintiff's assignor, would

be estopped to deny it. Westinghouse Co. v. Formica Co., 266 U. S. 342 (1924).

We think it plain that the defendants' process infringes that of the plaintiff, as set forth in claim 4. The claim is very broad, and the granting of the patent allows the plaintiff the exclusive right to use, or license others to use, the process of reinforcing insoles by applying at room temperature to a strip of dry reinforcing material previously coated with a rubber cement, a coating of rubber adhesive which will cause quick adhesion of the reinforcing material and the insole, and applying, at room temperature, the insole to the strip of reinforcement material so coated. Claim 4 is in no way restricted as to the formulae for making the two coatings. The claim is the measure of the grant. Smith v. Snow, 294 U. S. 1 (1935). The patent sets forth the specification for "suitable" mixtures just as many patents suggest preferred methods or machines. But a patentee is in no sense limited to these illustrative specifications. If the contrary were true, a patent, particularly of a process, would be of little value. Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U. S. 405 (1908); Tilghman v. Proctor, 102 U. S. 707, 728 (1880); Moore Filter Co. v. Tonopah-Belmont Development Co., 201 Fed. 532, 541 [fol. 379] (C. C. A. 3rd, 1912). The defendants' pre-coat and top coat fall precisely within the broad scope of claim 4. The pre-coat follows closely the preferred formula of the specification. The defendants claim that the use of latex instead of rubber dispersed in a volatile solvent for the top coat differentiates their process from that of the plaintiff. We do not agree. Latex is a rubber substance, and it is a substantial equivalent for the preferred formula in the patent. The process of evaporation and absorption at room temperature is the same for each though the chemical reactions may not be identical. The terms of claim 4 are broad and cover the use of equivalent means to secure the desired reaction. Since the patentee is not limited to the "suitable" mixture suggested, the defendants use of the latex formula does not avoid infringement. Continental Paper Bag Co. v. Eastern Paper Bag Co., supra; Mowry v. Whitney, 14 Wall. 620, 648 (U. S. 1871); Nachman Springfilled Corp. v. Spring Products Corp., 68 F. (2d) 829 (C. C. A. 2nd, 1934); Moore Filter Co. v. Tonopah-Belmont Development Co., supra.

The other factor upon which the defendants rely as showing that their process does not infringe that of the plaintiff is the provision that the latex solution should be heated. However, the evidence and the inter partes test made conclusively showed that heat was not necessary to the defendants' process. The process could be and frequently was performed without heat. The same results were reached when the latex was at room temperature. The introduction of heat was not necessary to a satisfactory bond or quick adhesion. Even if it had been shown that heat somewhat improved the process, the charge of infringement would not be escaped. Tilghman v. Proctor, supra. The defendants use the principle and appropriate the substance of the claim in issue, and the fact that they avoided the letter of the claim by the addition of the unnecessary element of heat does not prevent infringement. Westinghouse v. Boyden Power Brake Co., 170 U. S. 537, 568 (1898); Vortex Mfg. Co. v. Ply-Rite Contracting Co., 33 F. (2d) 302 (D. Myld. 1929). The defendants' process is within claim 4 and infringes it.

It is, therefore, necessary to decide whether the defend- [fol. 380] ants are infringers of the plaintiff's claim, and if so, whether they are direct or contributory infringers. To be direct infringers, the defendants must have used the plaintiff's process. Moore-Filter Co. v. Tonopah-Belmont Development Co., supra. There is no evidence that they have done so or are doing so. They sell rolls of duck cut in strips pre-coated with a dry rubber cement, and they sell the liquid to be used as a top coat. The plaintiff has no patent on either of these things. It simply has a patent on their use in a particular way for a particular purpose. In pre-coating the duck and procuring the top coat from others, the defendants are completely within their rights. They are in no way using the plaintiff's process. The defendants also supply to their customers a machine which applies the adhesive top coat to the pre-coated duck. The use of this machine, without a license from the plaintiff, in carrying out the plaintiff's process (or the infringing process of the defendants) would be a direct infringement of the plaintiff's claim. But the defendants do not use the machine. They merely supply it for use by shoe manufacturers. The manufacture of the machine by the defendants is not an infringement of the plaintiff's process patent. The plaintiff has a machine patent on the machine which it supplies to its

customers for using its process. It may be that the defendants' machine infringes this patent, and the plaintiff may test its rights by suit for ordinary infringement of that patent. Philad Co. v. Lechler Laboratories, 107 F. (2d) 747 (C. C. A. 2nd, 1939). But even such infringement would not constitute the defendants direct infringers in this case. "So distinctly [*sic*] and separate in the patent law are process and apparatus for utilizing such process that where, after a patent for a process by one inventor, a second inventor might patent a novel apparatus for utilizing the process, the situation would arise that the inventor of the process could not employ his process in such machine without license from the machine patentee, and the latter could not use the process in his machine without license from the process patentee. It will therefore be evident that the test of process infringement is not the similarity of apparatus, but rather whether the apparatus, no matter [fol. 381] what its form, utilizes the process." Moore Filter Co. v. Tonopah-Belmont Development Co., supra at 541-542. The defendants are clearly not direct infringers of the plaintiff's process patent.

However, the defendants manufacture and sell materials for use in an infringing operation with knowledge that they will be so used. They induce their customers to use such infringing processes and indirectly receive their profit from such infringing use. There can be no doubt that they are contributory infringers. Individual Drinking Cup Co. v. Errett, 297 Fed. 733 (C. C. A. 2nd, 1924). Though there is some confusion on the point, we understand the District Judge to have reached the same conclusion. His second conclusion of law is that both defendants are guilty of infringement of claim 4. It is to be noted that he does not say "direct" infringement. The third conclusion of law states that the plaintiff is not entitled to maintain this suit "for contributory infringement". We believe the District Judge was correct. The defendants are contributory infringers, and the plaintiff's argument that they are direct infringers cannot prevail.

Since the defendants are contributory infringers only, it is obvious that in the light of the decided cases the plaintiff is not entitled to recover. The plaintiff's course of business is precisely that of the patentee in Leitch Mfg. Co. v. Barber Co., 302 U. S. 458 (1938). The defendants are in a situation similar to the vendor of the emulsion in

that case. The plaintiff by granting implied licenses only to those who buy unpatented materials from it has brought itself squarely within the language of the Leitch case and Carbice Corporation v. American Patents Development Corp., 283 U. S. 27 (1931). In the former case the court declared the rule to be that a patentee doing business in the manner of the plaintiff would be denied relief against such contributory infringers as the defendants "on the broad ground that the owner of the patent monopoly, ignoring the limitation 'inherent in the patent grant', sought by its method of doing business to extend the monopoly to unpatented material used in practicing the invention. By the rule there declared every use of a patent as a means of [fol. 382] obtaining a limited monopoly of unpatented material is prohibited. It applies whether the patent be for a machine ,a product, or a process". Clearly, this must conclude the case. Autographe Regster Co. v. Sturgis Register Co., 110 F. (2d) 883 (C. C. A. 6th, 1940); Philad Co. v. Lechler Laboratories, supra; J. C. Ferguson Mfg. Works v. American Lecithin Co., 94 F. (2d) 729 (C. C. A. 1st, 1938). See Note, (1938) 52 Harv. L. Rev. 308, 313.

The plaintiff seeks to prevent the application of this rule to this case by limiting the doctrine to those situations in which the alleged contributory infringer supplies staple articles of commerce. It insists that where the articles supplied are specially manufactured for use in this particular process, relief is not to be denied the patentee no matter what his course of business. It points to dry ice, bituminous emulsion, and lecithin as such staple articles. It relies upon our decision in J. C. Ferguson Mfg. Works v. American Lecithin Co., supra, and that of the Ninth Circuit in Johnson Co. v. Philad Co., 96 F. (2d) 442 (C. C. A. 9th, 1938), in support of this proposition. In the Ferguson case we said that a process patent could not be extended "to monopolize the sale of unpatented staple material, used in such product, process, or composition." We do not consider that to have been intended as a limitation upon the doctrine of the Leitch and Carbice cases. The language of those cases is extremely comprehensive and is by no means restricted to staple articles. Lecithin being a staple material there was no necessity for this court to have passed on whether the doctrine applied to other than staple materials, and we do not believe it did so. There is every indication that the Carbice and Leitch cases apply to specially

designed non patented articles. See International Business Machines Corp. v. United States, 298 U. S. 131 (1936); Autographic Register Co. v. Sturgis Register Co., supra; Oxford Varnish Co. v. Ault & Wiborg Corp., 83 F. (2d) 764 (C. C. A. 6th, 1936); Alemite Corp. v. Lubrair Corp., 62 F. (2d) 899 (C. C. A. 1st, 1933). We agree with the opinion of the Second Circuit in Philad Co. v. Lechler Laboratories, supra, that the emphasis is on the fact that the articles sold by the alleged contributory infringers were [fol. 383] not covered by the plaintiff's patent although it conducted its business as though they were. For this reason we cannot agree with the limitation expressed in Johnson Co. v. Philad Co., supra.

The plaintiff further argues that its present method of doing business is the only practicable way to exploit its patent and that it should not be penalized for its necessary effect. The trial judge expressed himself as unimpressed by this contention, and we agree with his conclusion. It is no doubt true that the shoe manufacturers prefer to procure the pre-coated duck, the material for the top coat, and the machines for using the plaintiff's process from a central source. It is also likely that they wish to perform the process as required in their own factories. It would be perfectly practicable for the plaintiff to grant licenses for the use of its process at a yearly fee, or a royalty based on the number of yards of pre-coated duck or the number of gallons of top coat used, or any other suitable measure. In that way the plaintiff can exploit the patent monopoly, and only the patent monopoly, while leaving the manufacturer free to buy the unpatented materials wherever it is to his best advantage to do so. Such an arrangement would cause little variation in the plaintiff's method of doing business while effectively preventing the extension of a limited monopoly to unpatented materials.

The plaintiff's difficulty appears to be that it misconceives its patent rights under claim 4. It has no right to prevent anyone from pre-coating a reinforcing fabric for insoles with a cold rubber cement, slitting it and rolling it into rolls. It has no right to prevent anyone preparing and selling an adhesive top coat with a substantial rubber content which will adhere at room temperature to the insole and the reinforcing material. It has no right, under claim 4 of the patent here in suit, to prevent anyone from making

machines to utilize its process. Mowry v. Whitney, supra, at 652; Moore Filter Co. v. Tonopah-Belmont Development Co., supra. All that the plaintiff is entitled to do is to prevent any unlicensed person from combining these materials in the patented process or in aiding indirectly in such infringement. Because of its course of business, the plain- [fol. 384] tiff is denied relief even against such contributory infringement as the furnishing of unpatented articles with the knowledge that they will be utilized in an infringing process.

It has been suggested that the practice of the plaintiff in granting limited licenses to the Pepperell Mfg. Co. and the H. B. Products Co. to make, use and sell pre-coated reinforcing fabric for latex or non-solvent top coating shows that it is properly exploiting its patent. The business practice of the licensees is the same as the plaintiffs. By purchasing their pre-coated material the manufacturers get an implied license to use the plaintiff's process. We do not believe that the introduction of a middleman licensed by the patentee and practicing the business methods condemned by the Leitch case, through which the plaintiff directly benefits from royalties, can save the plaintiff from the application of the doctrine. An examination of the facts in several of the cases shows that similar arrangements were of no avail. See Leitch Mfg. Co. v. Barber Co., supra, at 460, note 2; Barber Asphalt Corp. v. La Fera Grecco Contracting Co., 47 U. S. P. Q. 1 (C. C. A. 3rd, Sept. 20, 1940), rev'g, 30 F. Supp. 497 (D. N. J. 1939).

The defendants' process infringes the plaintiff's patent, but the plaintiff is denied relief against the defendants as contributory infringers because it exploits its patent primarily as a means of suppressing competition in unpatented materials used in connection with it. The District Judge was correct in dismissing the complaint.

The decree of the District Court is affirmed with costs to the appellees.

MAGRUDER, J. (concurring):

I agree that the defendants have infringed the plaintiff's patented process, for the reasons stated by Judge Mahoney. Yet denial of equitable relief in the circumstances disclosed is amply supported by authority, and I concur in the result reached by the court.

It is not clear to me, however, that the case depends upon any distinction between direct and contributory infringe-
[fol. 385] ment. This distinction is often a shadowy one, as it is in the case at bar. The defendants have certainly participated more directly and intimately in the infringing process than did the defendant in Leitch Mfg. Co. v. Barber Co., 302 U. S. 458, where all it did was to sell to road contractors a staple unpatented article (bituminous emulsion) with knowledge that a small proportion of it would be used by the infringing contractors in practising the patented process. Here the defendants are engaged in actively inducing unlicensed shoe manufacturers to practice the process. They furnish to such manufacturers the machines, the pre-coated duck and the adhesive top coat, all especially designed and prepared for this particular use, and, in addition, they furnish "instruction to operators, servicing of machines, and advice and assistance in reinforcing operations." Certainly, if the shoe manufacturers as direct infringers would be liable to the plaintiff, ordinary principles of tort liability would require us to hold the defendants liable as joint tortfeasors.

But in my opinion the doctrine of the Leitch case gives immunity to the direct infringer as well as to one who might be called a contributory infringer. It would be a solemn farce to hold that the seller of the unpatented article cannot be enjoined from making the sale to the direct infringer for use in the process, but that the direct infringer may be enjoined from practicing the process. If the plaintiff in the Leitch case could have got an injunction against any infringing road contractors who purchased bituminous emulsion from anybody other than the plaintiff, the defendant would have been quite as effectively choked off from selling this unpatented article for use in the process as if the injunction had run against the defendant itself. But the whole purpose of the doctrine laid down in the Leitch case was to thwart "every use of a patent as a means of obtaining a limited monopoly of unpatented material." 302 U. S. at 463. Accordingly, I think that American Lecithin Co. v. Warfield Co., 105 F. (2d) 207, made a correct deduction from the Leitch case in holding that it gave immunity to a direct infringer as well as to a contributory infringer. It may be noted that this case was cited with approval in Ethyl Gaso-
[fol. 386] line Corp. v. United States, 309 U. S. 436, 459. And I see nothing in the reasoning or the language of the

Leitch case to indicate that it applies only to the sale of "staple" unpatented articles. Philad Co. v. Lechler Laboratories, 107 F. (2d) 747, 748. See Ethyl Gasoline Corp. v. United States, 309 U. S. 436, 459.

This does not mean that the patentee suffers a forfeiture of its patent rights because of objectionable practices in exploiting the patent, but merely that the patentee is disabled from obtaining legal redress for infringements while such practices continue. There is no present need to inquire how far the doctrine of the Leitch case squares with earlier lower court holdings that violation of the anti-trust laws by a patentee is no defense to a suit for patent infringement. See Brown Saddle Co. v. Troxel, 98 Fed. 620; Radio Corp. of America v. Majestic Distributors, 53 F. (2d) 641; Buck v. Newsreel, Inc., 25 F. Supp. 787.

Presumaoly there is a maximum cost for reinforced insoles prepared by the patented process beyond which shoe manufacturers would find it uneconomic to utilize the process. That maximum cost would include, among other elements, the patentee's charge for practising the process, and also the profits to the suppliers of the unpatented materials used with the process. If the patentee is not also engaged in supplying the materials, he must fix the royalty at a point which permits a reasonable profit to suppliers furnishing materials to the shoe manufacturer and at the same time does not make it uneconomic for the shoe manufacturer to utilize the patented reinforcing process. Otherwise the patentee would make no headway in marketing the process. There is thus a definite limit to the profit a patentee can realize by the simple exploitation of the patent monopoly in this way.

But the patentee, in addition to realizing the maximum profit obtainable merely from licensing the process, may want to profit by the sale of unpatented materials used by the licensee. This is a legitimate object. However, the doctrine of the Leitch case is that the patentee may not utilize the leverage of the patent monopoly to achieve a limited monopoly of the sale of the unpatented materials. [fol. 387] If the shoe manufacturer is in the market for the purchase of unpatented materials, it must be a fair field and no favor as between the patentee and its competitors in the sale of those articles.

The practical question then is presented, how the plaintiff in the case at bar could legitimately have proceeded to exploit its patent monopoly.

(1) The plaintiff could have laid the patent "on the shelf" and neither practised the process itself nor licensed others to do so. In this event, the plaintiff could have got an injunction against any direct or contributory infringer.

(2) The plaintiff might without licensing anyone have practised the patented process itself in its own plants and sold to shoe manufacturers the reinforced insoles ready for insertion in the shoes. This of course would have excluded the defendants from manufacturing and selling the unpatented pre-coated duck and the top coat for use in connection with the patented process. It might have enabled the plaintiff to make a profit in excess of the maximum profit that could have been derived merely from licensing the process, since the price of the reinforced insoles to shoe manufacturers would include a reasonable profit on the pre-coated duck and top coat supplied by the patentee. However, the record is clear that for many reasons it happened not to be feasible for the plaintiff to follow this perfectly legitimate method of exploiting the patent. As a practical matter the final reinforcement of the insoles, in accordance with the patented process, must be done in the shoe factories.

(3) The plaintiff might have licensed shoe manufacturers to use the process on a royalty basis. It appears that the shoe manufacturers probably would not want to bother with the preliminary steps of preparing the pre-coated duck. But under this alternative there would be nothing to prevent the shoe manufacturers from buying the unpatented materials where they pleased, that is, the pre-coated duck and the top coat. They could buy these materials from the plaintiff or from the defendants or from any other com- [fol. 388] petitor. Whether the shoe manufacturers could obtain from the defendants the machines for practising the process would of course depend upon whether the defendants' machines infringed the plaintiff's machine patent. There is no evidence that the plaintiff ever refused so to license any shoe manufacturer; nor is there any evidence that any shoe manufacturer ever sought such a license. At the oral argument before us counsel for the plaintiff stated that the plaintiff would be willing to grant such licenses on a suitable royalty basis.

(4) The plaintiff might adopt a policy of granting licenses to shoe manufacturers only upon the express con-

dition that all the unpatented materials used in the process must be bought from the plaintiff. Such a condition would be void under the decisions. Carbice Corp. v. American Patents Development Corp., 283 U. S. 27.

(5) A fifth alternative is what the plaintiff did in the case at bar. It granted no express licenses to the shoe manufacturers, but offered to furnish the machines, the pre-coated duck, the top coat and the incidental supervision over the shoe manufacturers' practice of the process in reinforcing the insole. The compensation was fixed as a single charge based on so much per web yard of pre-coated duck supplied by the plaintiff. If, as seems to be the fact, this charge was somewhat higher than the similar charge made by the defendants, it is to be remembered that the plaintiff had something to sell which the defendants could not give, namely, the right to practise the patented process. This method of doing business resulted in giving to the shoe manufacturers who dealt with the plaintiff an implied license to practise the patented process in connection with the unpatented materials furnished by the plaintiff. Such manufacturers did not, however, have any license, express or implied, to practice the process upon unpatented materials procured from other sources.

We are obliged by the decision in Leitch Mfg. Co. v. Barber Co., 302 U. S. 458, to regard the fifth alternative just mentioned as being the substantial equivalent of the fourth and as being equally objectionable. As the court said (pages 460-61):

"For the method of so retarding evaporation the Barber Company acquired the process patent sued on, and seeks [fol. 389] to use it to secure a limited monopoly in the business of producing and selling the bituminous material for practicing and carrying out the patented method. The company does not itself engage in road building, or compete with road contractors. It does not seek to make road builders pay a royalty for employing the patented method. It does not grant to road builders a written license to use the process. *But it adopts a method of doing the business which is the practical equivalent of granting a written license with a condition that the patented method may be practiced only with emulsion purchased from it.* [Italics ours.] For any road builder can buy emulsion from it for

that purpose, and whenever such a sale is made, the law implies authority to practice the invention. On the other hand The Barber Company sues as contributory infringer a competing manufacturer of this unpatented material who sells it to a road builder for such use. Thus, the sole purpose to which the patent is put is thereby to suppress competition in the production and sale of staple unpatented material for this use in road building."

At the oral argument it seemed to me that the method of business adopted by the plaintiff in the case at bar could not be considered objectionable in the absence of a finding that the plaintiff had refused or would refuse to grant an unrestricted license to any shoe manufacturer who chose to buy from some other source the materials used in reinforcing the insoles by the patented process. That is, if the plaintiff is prepared to grant an unrestricted license on a royalty basis to any shoe manufacturers who prefer to obtain the unpatented pre-coated duck and top coat elsewhere, it is difficult at first blush to see how the plaintiff would be doing anything wrong in furnishing the unpatented materials and incidental services at so much per web yard of duck to those shoe manufacturers who prefer to do business with the plaintiff on that basis. But this point was urged in Leitch Mfg. Co. v. Barber Co., supra, and it was pointed out in the plaintiff's brief before the Supreme Court that the plaintiff was "not shown to have refused to grant any license under the patent, much less granted any license conditioned on purchase of emulsion from it." The argument was to no avail. The court considered it sufficient to condemn the plaintiff's method of doing business, that, as matters stood, no road contractor had a license to practise the [fol. 390] patented process except those contractors who bought their bituminous emulsion from the plaintiff. The court apparently did not consider it relevant that contractors who were disposed to buy their bituminous emulsion from the defendant or from some other source might, if they had applied to the plaintiff, have obtained an unrestricted express license to practise the process for a stated royalty.

The catch in the professed willingness of the patentee to offer the alternative of an unrestricted license to any shoe manufacturers who prefer to buy the unpatented materials elsewhere is, I suppose, that the terms of such license can be

so framed as to render the choice illusory, and thus to leave the patentee's competitors at a disadvantage. See Dehydrators, Ltd., et al. v. Petrolite Corp., Ltd., 48 U. S. P. Q. 232, decided by the Circuit Court of Appeals for the Ninth Circuit on January 6, 1941; also Barber Asphalt Co. v. La Fera Grecco Contracting Co., 116 F. (2d) 211. In the first of these cases the patentee, who was supplying an unpatented product at a single price which combined a charge for the use of the process and a charge for the product supplied, ran afoul of the Leitch case, so the court held, even though the patentee had publicly offered to any persons who preferred to procure the unpatented product elsewhere the alternative of an unrestricted license to practise the process, upon payment of a royalty based on the difference between the cost of the unpatented product on the open market and the patentee's sale price for the same unpatented product. The court said:

"If the appellee had been more interested in promoting or exploiting its patent than in selling its Tret-O-Lite it would have been a very simple matter to fix a royalty fee of so many cents per gallon whether purchased from the appellee or from outsiders. Indeed, no other course on the part of a patentee who is selling a commercial product to use in the patented process he owns would seem to quite meet the claim that the practice of combining the price of a royalty and of the product in the same unit without separation tends to promote a monopoly in the product if the patent monopoly is not waived."

Suppose the plaintiff adopts the method of business suggested in the passage just quoted, and licenses all shoe manufacturers who want to utilize the process, at a fixed royalty [fol. 391] payable whether the manufacturers buy the unpatented materials from the plaintiff or from its competitors. Theoretically, then, the plaintiff and defendants would be on a free competitive basis in the sale of the unpatented materials used in the process. But the patent monopoly gives the plaintiff an undeniable advantage. The royalty exacted might be fixed at a point which would enable the plaintiff to sell the unpatented materials at prices its competitors could not profitably meet, and still yield the patentee an over-all profit. This profit might indeed be equivalent to the maximum profit that the patentee could have realized by the simple licensing of the process, as pre-

viously explained, plus a reasonable profit on the sale of the unpatented materials. If it were sought to extend the doctrine of the Leitch case to cover such a situation, many difficulties would at once be presented, not the least of which would be elusive problems of cost accounting. But if the doctrine is not so extended the patentee may yet be able to exploit the patent monopoly in a way to achieve the result condemned in the Leitch case; and the defendants, in the long run, will be little better off for having escaped an injunction at this point.

I agree that on the decided cases the decree below should be affirmed. However, in view of the differences of opinion that have developed in the lower courts as to the scope and effect of the Leitch case, it may be that the Supreme Court will find an early occasion to review the whole subject matter.

On the same date, to wit, February 21, 1941, the following Final Decree was entered:

[fol. 392] Proceedings in Circuit Court of Appeals

Final Decree

February 21, 1941

This cause came on to be heard January 8, 1941, upon the transcript of record of the District Court of the United States for the District of Massachusetts, and was argued by counsel.

Upon consideration whereof, It is now, to wit, February 21, 1941, here ordered, adjudged and decreed as follows: The decree of the District Court is affirmed with costs to the appellees.

By the Court, Arthur I. Charron, Clerk.

Thereafter, to wit, on March 7, 1941, mandate was stayed until further order of court.

Clerk's Certificate to foregoing transcript omitted in printing.

[fol. 393] SUPREME COURT OF THE UNITED STATES

STIPULATION AS TO PRINTING RECORD—Filed June 16, 1941

Pursuant to Rule 38, paragraph 8 of the Rules of this Court, the parties hereby stipulate that the following exhibits, which were included in the printed transcript of record in the United States Circuit Court of Appeals, shall be omitted from the printed record herein before this Court:

Plaintiff's Exhibit 13
Plaintiff's Exhibit 14.
Defendants' Exhibit E.

Harrison F. Lyman, Attorney for Petitioner. Robert Cushman, Attorney for Respondents.

[fol. 394] [File endorsement omitted.]

[fol. 395] SUPREME COURT OF THE UNITED STATES

ORDER ALLOWING CERTIORARI—Filed June 2, 1941

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the First Circuit is granted, and the case is assigned for argument immediately following No. 946, Morton Salt Company vs. The G. S. Suppiger Co.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.